2003

Kentucky Annual Economic Report 2003

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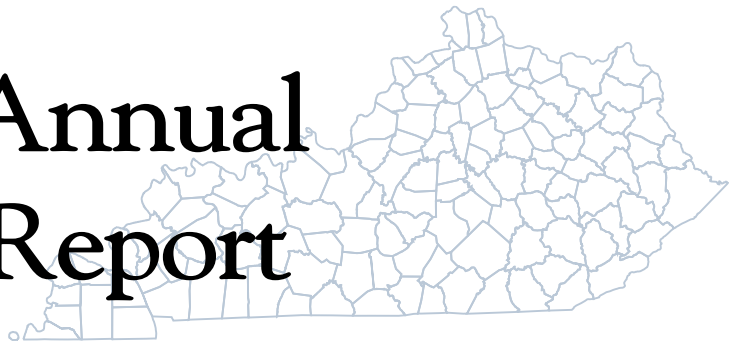
2003

Center for Business and Economic Research

Department of Economics

Gatton College of Business and Economics

University of Kentucky

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From the Acting Director . . .

(Director Mark Berger is on sabbatical)

The Center for Business and Economic Research (CBER) is pleased to publish the 31st *Kentucky Annual Economic Report.* The Annual Report is one of the important ways in which the Center fulfills its mission to monitor and analyze the Kentucky economy. The 2003 Report contains six articles that provide state and national economic forecasts and address many of the major economic trends and policy issues facing the Commonwealth.

In publishing this report, we draw on expertise from the Gatton College of Business and Economics at the University of Kentucky. Our authors include four faculty members and one graduate student from the Department of Economics, one economic analyst from CBER, the Director of the University of Kentucky Survey Research Center, one faculty member from the University of Louisville Department of Economics, and one economist from the Federal Reserve Bank of Cleveland. One of the strengths of CBER is that we are able to bring together some of the best economists in the state to work on our research projects.

The first article looks at an issue that has received widespread attention in Kentucky in recent years. Mark Berger, Chris Bollinger, Paul Coomes, and Ron Langley use the results of a household survey they developed and conducted to examine the issue of underemployment in Kentucky, where underemployment is defined as part-time workers who would prefer full-tine work, or full-time workers who believe they are overqualified for their current job. Survey results indicate that between 14 percent (large urban counties) and 40 percent (rural Appalachian counties) of part-time workers would like a full-time job, depending on the region of the state. For those with a full-time job, between 26 percent (rural west counties) and 34 percent (exurban counties) report being overqualified for the job they hold although some of these workers are voluntarily underemployed.

In the second article, Dr. Christopher J. Waller, the Gatton Chair of Macroeconomics and Monetary Theory, looks back at the U.S. economy during 2002 and offers some predictions for 2003. He examines issues such as GDP growth, the stock market, consumption and consumer debt, investment, and taxes, among others. He argues that it is most likely that the nationally economy will grow at a 'normal' rate in 2003, but finds that it is a realistic possibility that the economy could slide back into recession.

The third article provides CBER's annual forecasts for the Kentucky economy for the next three years. These forecasts are produced with the University of Kentucky State Econometric Model, which I maintain and update. The forecast calls for growth in the Kentucky economy to gradually accelerate in 2003 with strong growth in 2004 before the economy moderates in 2005. The Kentucky economy is forecast to add 36,500 jobs annually on average, including nearly 5,000 jobs in manufacturing.

John Perry, a graduate student in the Department of Economics, examines employer-provided health benefits in Kentucky in the fourth article. Utilizing data from a special survey of Kentucky employers, John examines the percentage of Kentucky workers who work for employers that offer: individual insurance coverage, dependent coverage, and retiree coverage.

Rates are provided for salaried and hourly employees, and are provided by Area Development District and industry. John finds that the vast majority of Kentucky workers are being offered individual health and dependent health insurance coverage, and that employers pay a much larger proportion of the cost of individual coverage. Just over one-third of workers are offered retiree coverage by their employers. As described in the article, these rates differ by Area Development District, and in particular, by industry.

In the fifth article, Jonathan Roenker, an economic analyst at CBER, examines changes in e-commerce activity in Kentucky over the last year. This research is part of an on-going effort by CBER to track the growth of on-line sales using an annual survey of Kentucky businesses. Survey results indicate that the percentage of large Kentucky businesses that conduct on-line sales grew in the last year, but at a slower pace than in previous years. The percentage of small businesses that conduct on-line sales, however, did not grow. Based on the results of the survey, in 2002 26.5% of large Kentucky businesses and 11.2% of small Kentucky businesses are involved in e-commerce.

In the sixth article, Mark Schweitzer, an economist with the Research Department of the Federal Reserve Bank of Cleveland, and I examine the recent drop in manufacturing employment in Kentucky in the context of the recent and previous recessions. The principal finding was that the decline in Kentucky manufacturing during the recent recession, while it was large, was less than the national decline. However, the relative performance of Kentucky manufacturing was not as strong as it was during the recession of the early 1990s. This change may be important since recessions are a crucial period for industrial reallocation, and recession-period trends may persist beyond the recession.

The past year was again very successful for the Center for Business and Economic Research. Perhaps our most significant accomplishment was the release of our two-year project *Kentucky Labor Supply and Demand Surveys.* This study, conducted with the University of Kentucky Survey Research Center, and the Department of Economics and the Survey Research Center at the University of Louisville, involved survey design and data collection from several thousand Kentucky households and businesses. Data generated during the survey allowed the research team to develop new information about the Kentucky economy not available from government data sources such as: information about the underemployment rate in Kentucky and Kentucky counties, and the level of employee benefits available from Kentucky businesses by industry and region. This information has been featured in several of the articles in this Annual Report.

In the past year, we also conducted numerous research projects for state and local government and private industry. We examined the tax structure and the relative level of taxation in Kentucky and surrounding states. We also conducted several evaluations of major tourism investments for the Kentucky Tourism Cabinet, evaluated the economic and fiscal impact of two dam projects, and conducted downtown market studies for two Kentucky towns. We anticipate maintaining an active research program in the coming year and look forward to challenging new projects.

Center for Business and Economic Research

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The Center for Business and Economic Research (CBER) is the applied economic research branch of the Carol Martin Gatton College of Business and Economics at the University of Kentucky. Its purpose is to disseminate economic information and provide economic and policy analysis to assist decision makers in Kentucky's public and private sectors. In addition, CBER performs research projects for federal, state, and local government agencies, as well as for private-sector clients nationwide. The primary motivation behind CBER's research agenda is the belief that systematic and scientific inquiries into economic phenomena yield knowledge which is indispensable to the formulation of informed public policy.

CBER's research includes a variety of interests. Recent projects have been conducted on manpower, labor, and human resources; transportation economics; health economics; regulatory reform; public finance; and economic growth and development. In addition to the *Kentucky Annual Economic Report*, CBER publishes a quarterly newsletter, *Kentucky Business and Economic Outlook*, which contains forecasts for the Kentucky economy as well as other business and economic issues. CBER also publishes the *Carol Martin Gatton College of Business and Economics Working Papers*, which report the results of current research by college faculty, and *Growth and Change*, a scholarly, refereed journal of urban and regional policy with international distribution.

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Dr. Mark C. Berger

Dr. Mark C. Berger is the Director of CBER and William B. Sturgill Professor of Economics at the University of Kentucky. Dr. Berger received a Ph.D. in economics from The Ohio State University in 1981. He has conducted applied economic research studies on a variety of subjects including higher education, health issues, human capital, the earnings and employment of workers, and the estimation of the demand for electricity. He has received research funding from a variety of public and private sources, including the U.S. Small Business Administration, the National Science Foundation, the National Institutes of Health, the U.S. Department of Labor, and several Kentucky state government agencies. Dr. Berger's research has been published in some of the leading journals in economics and public policy, including *American Economic Review*, *Journal of Political Economy*, *Review of Economics and Statistics*, *Industrial and Labor Relations Review*, and the *Journal of Human Resources*.

Dr. Christopher R. Bollinger

Dr. Christopher R. Bollinger joined the faculty in the Department of Economics in the fall of 1998. Dr. Bollinger earned his Ph.D. in Economics from the University of Wisconsin. His thesis, written under the direction of Charles F. Manski, was titled Measurement Error in Binary Regressors, With an Application Bounding the Union Wage Differential. A chapter from this thesis appeared in the Journal of Econometrics (August 1996). Recent papers include "Measurement Error in the CPS: A Nonparametric Look" (Journal of Labor Economics, July 1998), "Modeling Food Stamp Program Participation in the Presence of Reporting Errors" (Journal of the American Statistical Association, September 1997), "Estimation with ResponseError and Non-response: Food Stamp Participation in the SIPP" (Journal of Business and Economic Statistics , 2001), "The Impact of Rapid Rail Transit on Economic Development: The Case of Atlanta's MARTA" (Journal of Urban Economics, September 1997).

Dr. Paul Coomes

Dr. Paul Coomes is Professor of Economics and National City Research Fellow at the University of Louisville. Dr. Coomes received his Ph.D. in economics from the University of Texas in 1985. Before going to Texas to finish his graduate training, Paul was assistant director of CBER and helped build databases and models to improve economic intelligence on the Kentucky area. At the University of Louisville, Paul has specialized in regional economic development studies, with particular attention to industrial impacts, peer city analyses, workforce issues, and measurement problems. His research has been published in the Journal of Economic Dynamics and Control, Urban Studies, Environment and Planning A, Economic Development Quarterly, the International Journal of Forecasting, and the Journal of Economic and Social Measurement.

Dr.Ronald E. Langley

Dr. Ronald E. Langley joined the University of Kentucky Survey Research Center as the Research Development Coordinator in 1996. He was appointed Interim Director in October 1997 and assumed the Director's position full-time in June 1998. Prior to joining SRC, Dr. Langley was a faculty member in UK's Department of Political Science and jointly appointed to the Martin School of Public Policy and Administration. Dr. Langley earned his Ph.D. in 1990 at Michigan State University with his main areas of concentration being in Public Administration and Policy, American Institutions, Public Opinion, and Quantitative Research Methods. His research interests are heavily tied to investigating the effects of public opinion on public policy, particularly macroeconomic policy. Dr. Langley is currently the Chairman of the National Network of State Polls, has served as a Principal Investigator on dozens of projects at UK-SRC and has published book chapters and several articles in scholarly journals such as *Political Behavior, Political Research Quarterly, Southeastern Political Review,* and, *Studies in Comparative International Development.*

Authors ∙∙

John J. Perry

John J. Perry is a graduate research assistant at the Center for Business and Economic Research and is a doctoral student in the Department of Economics at the University of Kentucky. Mr. Perry graduated from Centre College in 2000 with a B.S. in economics. Before coming to the University of Kentucky he worked as an actuarial consultant in employee benefits for Milliman USA. His primary areas of interest are public and labor economics.

Jonathan M. Roenker

Jonathan M. Roenker is an Economic Analyst at the Center for Business and Economic Research at the University of Kentucky. Mr. Roenker received a M.S. in economics from the University of North Carolina at Chapel Hill in 2000 and a B.S. in economics from the University of Kentucky in 1998. He has considerable experience in conducting economic impact studies and has worked on several studies of Kentucky business and economic issues during his time at CBER. Mr. Roenker also possesses considerable experience in econometric methods and modeling.

Dr. Mark Schweitzer

Dr. Mark Schweitzer is an economist in the Research Department. His principal fields of activity are labor economics and applied econometrics. Dr. Schweitzer received his Ph.D. in economics from the University of California, LosAngeles.

Dr. Eric C. Thompson

Dr. Eric C. Thompson is Associate Director of CBER and a Research Associate Professor in the Department of Economics and CBER at the University of Kentucky. Dr. Thompson received his Ph.D. in agricultural economics from the University of Wisconsin in 1992. Previously, he was a Research Assistant Professor at the Center for Economic Research at West Virginia University and in the Community Economic Development Division of the West Virginia University Extension Service before coming to Kentucky in 1995. Dr. Thompson's expertise lies in the fields of economic forecasting and regional economics. He has conducted many studies on local and state economic development and currently maintains and updates the University of Kentucky State Econometric Model.

Dr. Christopher J. Waller

Dr. Christopher J. Waller is the Carol Martin Gatton Chair of Macroeconomics and Monetary Theory at the University of Kentucky and a Research Fellow of the Center for European Integration Studies at the University of Bonn. He received his B.S. from Bemidji State University (Minnesota) in 1981 and his Ph.D. from Washington State University in 1985. From 1985-1998 he was a faculty member at Indiana University. Dr. Waller has been a Visiting Professor at Washington University, the University of Mannheim, and the National University of Ukraine-Kiev. He has also served as a Visiting Scholar at the Board of Governors of the Federal Reserve System and the Federal Reserve Bank of St. Louis. He has also served as a consultant to the Federal Reserve Bank of Cleveland. His research interests include monetary search models, the political economy of central banking, bargaining theory, and intranational banking integration.

Table of Contents ....

Mark Berger, Chris Bollinger, Paul Coomes and Ron Langley

As labor markets tightened in the late nineties, communities looked to the underemployed to support the workforce needs of expanding industries. Part-time workers seeking full-time jobs, and full-time workers seeking jobs that better fit their credentials are all considered underemployed, and represent a form of excess capacity. There are no publicly available estimates of the number of underemployed, either nationally or around Kentucky. Using a new survey of households combined with detailed results of the 2000 Census, we have produced estimates of the number and type of underemployed residents in each of Kentucky's counties. These are now available on a web site hosted by the state Cabinet for Workforce Development.

Christopher J. Waller

The U.S. economy has struggled this year to recover from the recession of 2001. In this article I review the events of 2002 and their effects on macroeconomic variables. I then conjecture scenarios for how the U.S. economy will behave in 2003. I am cautiously optimistic that the U.S. economy will grow at 'normal' rates but sliding back into recession in 2003 is a realistic possibility. If so, then tax cuts remain the only tool to revive the economy.

Eric C. Thompson

Economic growth is forecast to rebound in Kentucky during most of 2003 as the national economy recovers from the recent recession over the course of the year. Economic growth is then expected to accelerate further in 2004, before moderating in 2005. In 2003, real gross state product in Kentucky is forecast to grow at a 3.2 percent rate, while nominal total personal income is forecast to grow by 5.4 percent (real, inflation adjusted, income growth is forecast at 2.6%), total employment by 2.2 percent, and total population by 0.6 percent.

For the entire 2003 to 2005 period, real gross state product is forecast to average 3.4 percent growth each year, compared to 5.9 percent annual growth for nominal total personal income, and 2.0 percent annual growth in employment. The rate of income growth forecast for the next three years is substantial, and is fueled by strong gains in wage and salary earnings.

Annual employment growth over the three-year period is forecast to average 36,500 jobs each year. The services industry, forecast to add 17,100 jobs each year, is expected by itself to account for nearly half of this employment gain. The retail trade sector is forecast to add 4,500 jobs per year, while the manufacturing sector is forecast to gain 4,700 jobs per year on average from 2003 through 2005.

These forecasts for the Kentucky economy are based on baseline expectations for the national economy as presented in the October 2002 U.S. Economic Outlook prepared by DRI-WEFA. These baseline forecasts assume a steady recovery in the national economy during 2003, but not the rapid growth frequently observed after recessions. The national unemployment rate is expected to peak during the first quarter of 2003. These baseline forecasts represent the most likely path for the national economy. As for alternative forecasts, DRI-WEFA places a roughly one in three chance of a very weak recovery during the year 2003.

Table of Contents ....

John Perry

In this article, the availability and general characteristics of employer sponsored health insurance for working Kentuckians are examined. Using recent survey data of Kentucky businesses, individual health insurance coverage, dependent health insurance coverage, and retiree health insurance coverage offered by employers are explored. All are examined at the State, Area Development District (ADD) and industry levels for both salaried and hourly full-time employees. In general, there are notable differences in health insurance availability for workers in Kentucky by both ADD and industry group for individual insurance. This variability increases substantially when looking at the percent of plan cost covered by employers and employee participation rates. Further, for both dependent and retiree health insurance, this finding is magnified. In all, this article offers a snapshot of the world in 2002 and demonstrates the differences in employer sponsored health insurance that exist throughout Kentucky

Jonathan M. Roenker

The U.S. Census Bureau's estimates of e-commerce sales reached $10.2 billion in the second quarter of 2002; a 24.2% increase over the second quarter of 2001; proof that e-commerce sales are still burgeoning despite the relatively slow economy. This article provides state-level data concerning electronic commerce for Kentucky from a recent survey conducted by the University of Kentucky Center for Business and Economic Research. Survey results indicate that while the percentage of large businesses in the state using the Internet to conduct online sales continued to grow, albeit at a significantly slower pace, the percentage of small business conducting online sales actually shrank over the previous year. Based on the results of the survey, 26.5% of large Kentucky businesses and 11.2% of small Kentucky businesses are involved in e-commerce. The characteristics of Kentucky firms currently selling online are considered as is these firms' experiences with e-commerce. Finally, the effects of online sales on revenues and profits of Kentucky firms are addressed.

Eric Thompson and Mark Schweitzer

There has been a substantial decline in manufacturing employment in the State of Kentucky over the past two years. In particular, manufacturing employment in Kentucky declined by 6.2% in 2001. Such a decline is not unprecedented during a recession period, but is a large enough to merit further examination, particularly since recessions are a crucial period for industrial reallocation, and recession-period trends may persist beyond the recession. The principal finding was that the decline in Kentucky manufacturing during the recent recession, while it was large, was less than the national decline. There were three additional findings of note: 1) the relative performance of Kentucky manufacturing was not as strong as it was during the recession of the early 1990s; 2) Kentucky did not substantially outperform northern states, which have been an important source of relocating manufacturing plants for Kentucky; and 3) the job losses in the non durable goods manufacturing industry were more severe in Kentucky than nationally.

Underemployment in Kentucky Counties[1]

Mark Berger, Chris Bollinger, Paul Coomes and Ron Langley

As labor markets tightened in the late nineties, communities looked to the underemployed to support the workforce needs of expanding industries. Part-time workers seeking full-time jobs, and full-time workers seeking jobs that better fit their credentials are all considered underemployed, and represent a form of excess capacity. There are no publicly available estimates of the number of underemployed, either nationally or around Kentucky. Using a new survey of households combined with detailed results of the 2000 Census, we have produced estimates of the number and type of underemployed residents in each of Kentucky's counties. These are now available on a web site hosted by the state Cabinet for Workforce Development.

Introduction

In the last half of the 1990s local economic development officials in Kentucky and in many other places around the US faced an unprecedented challenge. Economic growth and business investment were very strong, and companies were shopping for places to build new manufacturing, distribution and office facilities. However, published estimates of unemployment rates were very low, in some cases one to three percent, leading many companies to fret that communities could not provide sufficient labor to staff the new sites. In the spring of 2000, thirty-six of Kentucky's 120 counties had official unemployment rates below four percent, rates in seventeen counties were below three percent, and in three counties (Fayette, Jessamine and Woodford) were below two percent[2]. Business and civic leaders in many communities, not wanting to miss a business siting and not convinced that the local labor market was as tight as the statistics suggested, responded by commissioning studies of 'underemployment'. These studies, typically relying on telephone surveys, attempted to measure the number of persons in the labor market area who would change jobs if they could be hired for more hours, at a higher wage and benefit package, a shorter commute or other advantage over their current position[3]. Thus, local economic development officials used statistics on the underemployed to convince companies that there was still excess capacity in the labor market.

These underemployment studies cost tens of thousands of dollars, well beyond the research budgets of most counties. The Kentucky Workforce Cabinet, responding to pleas from local economic development and workforce organizations, commissioned a statewide study of underemployment in 2001. The goal was to provide county-level estimates of the magnitude and type of underemployment, and to develop a cost-effective method for updating the estimates. This paper describes that research and summarizes our estimates.

We designed and administered a survey of over three thousand households, wherein we replicated most of the questions from the long form Census questionnaire, and added a number of questions to determine if the respondents were underemployed. We used these results to calibrate a model to predict the amount and type of underemployment in each of Kentucky's counties, groups of contiguous counties, the fifteen Area Development Districts, and the ten Workforce Investment Act areas. We found that between 12 and 19 percent of adults that work hold a part time job, and of those between 14 and 40 percent would prefer a full time job. For those with a full time job, between 26 and 34 percent of adults report that they are qualified for a better job than the one they hold. However, around 40 percent of those who claim to be underemployed say this is voluntary - they prefer part time work or do not want to move or commute to a better job match. Detailed estimates are

available on the Cabinet web site, at www.kycwd.org/lmisurvey.htm, along with an extensive report.

Background

Most economists instinctively dismiss the term underemployment when they first encounter it. The conventional wisdom is that someone is either working, seeking work, or voluntarily out of the labor force (and possibly discouraged). If they do not like their job or the number of hours worked per week, they will seek better opportunities until they find a better fit. However, a bit of reflection suggests that there is something to the underemployment concept. While people have wide and continuous preferences for hours worked per day or week, most jobs available still require thirty-five to forty hours per week spread over five days. Thus, given this fixed hours constraint, most people are either underemployed or overemployed. A classic case is the well-educated parent-homemaker with several years work experience, interested in part-time professional work at a high wage, but unable to find anything better than low wage retail employment. Indeed, there is now a substantial scholarly literature on underemployment and overemployment.

The distinction between voluntary and involuntary part-time work is now well-recognized. In fact, the Labor Force Survey of the European Union includes questions to determine why respondents work part-time. Among part-time working males in 1998, forty percent of those aged 25-49 reported they would prefer full-time work but could not find it. For women, the proportion was much lower, only around sixteen percent. The European survey also found that both men and women working part-time, but preferring full-time, were much more likely to be in a contract or other temporary job than those working in full-time jobs.

There are other related constraints that limit people's ability to match their skills and preferences to the extant labor market. Consider the so-called trailing spouse - one spouse finds a very satisfying job in a place where there is no market for the special skills of their partner. Others find that they would have to relocate or commute long distances to attain a job that matched their training and abilities, but they value certain lifestyle patterns or community amenities more than the expected gain in income. In both of these examples, the person's underemployment is voluntary. They could relocate and receive a wage commensurate with their human capital. Nevertheless, so long as they choose to live in a labor market that is too thin or sparse to provide them appropriate employment opportunity, they are underemployed and the local labor market has excess capacity.

Method of Measuring Underemployment

Of interest here is the actual measurement of underemployment in a particular place. Unlike other important labor market variables, there is no official US Bureau of Labor Statistics definition or measure of underemployment. We use a definition of underemployment that is more in line with that used by local economic development officials. We consider a person to be underemployed if they work part-time but prefer full-time work, or if they believe that they are overqualified for their current job. The long form of the decennial census, administered to one in six households, asks detailed questions on demographic and economic characteristics, including workforce status, hours worked, education, occupation, commute time, and income by type. However, the questionnaire does not probe to see if the person is employed as fully as they would like. To measure this, we administered a phone survey to over 3,200 Kentucky households in 2001 that repeated the relevant census questions and additionally queried people about their underemployment (or lack of it). By repeating the census questions, we hoped to tie our findings on underemployment to socioeconomic variables that are measured for each local area and thus can be used to generate county-level estimates of underemployment[4]. We ran regressions to find relationships between the types of underemployment reported by respondents and their age, gender, hours worked, education, and industry of employment. We used these regressions to predict underemployment by type in each county.

Nearly all socioeconomic questions from the 2000 Census long form were repeated in our questionnaire[5]. At four points in the questionnaire we inserted a series of new questions to probe for underemployment[6].

Underemployment in Kentucky Counties

➤ If the person is employed, we asked if their primary position was temporary or permanent. If the response was 'temporary', we asked if the person would like to be employed in a more permanent job.

➤ If the respondent reported working less than 35 hours per week, we asked if they would rather have a full time job. And then we attempted to determine why the person was working part time. In particular, we offered the following reasons why the person was unable to work full time.
  ❏ lack of child care or dependent care
  ❏ geographic location
  ❏ lack of job opportunities
  ❏ lack of good income from available full time jobs
  ❏ disability
  ❏ lack of support from family

➤ If the respondent worked 35 or more hours at their primary job, they were considered to be working full time. We defined underemployment to these respondents as people are overqualified for their job because they have more training and experience than is required to perform the job, and ask if they feel they are underemployed in that sense. We also asked if their underemployment was by choice or whether they would rather have a better full time job. And, as with underemployed part time workers, we ask if any of six factors (above) contribute to their underemployment.

➤ Finally, for all employed persons, we ask a series of questions about skills, experience, and training.
  ❏ Do you think your skills, education, and experience fit well with your current employment?
  ❏ Do you think you should have a better job than the one you have now?
  ❏ Do you think you are qualified for a better job than the one you have now?
  ❏ Why do you feel you are qualified for a better job? Does your education qualify you for a better job?
  ❏ Is it on the basis of your skills?

  ❏ Is it on the basis of your experience?
  ❏ Is it on the basis of your training?
  ❏ Do you feel you are qualified for a better job than the one you have now for some other reason? What is that reason?
  ❏ Do you feel that you are paid and compensated appropriately for the work which you do?
  ❏ If you worked somewhere else that was a better fit to your level of skills, education, and experience, about how much more do you think your wages would be (in percent)?
  ❏ What would have to be changed about your current job for you to feel that it matched your qualifications? Possibilities: additional challenges/responsibilities, higher pay, better benefits, need a different job/job can't fit qualifications, other.
  ❏ What job do you desire that would be a better fit to your level of skills, education and training?

We hypothesized that underemployment patterns may differ by type of county. In particular, we suspected that workers in large urban counties (with thicker labor markets) would report less underemployment than those in remote rural counties. Based on population size and geographic location, we partitioned Kentucky's 120 counties in five types: large urban-suburban, small urban-suburban, exurban, rural Appalachia, and rural west-central. See the accompanying map and table for the designations. The large urban-suburban category includes the core counties of the Louisville, Cincinnati-Northern Kentucky, and Lexington labor markets. The small urban-suburban category includes the counties that contain a city of sufficient size to support such urban services as a daily newspaper, a hospital, a shopping mall, or regular air service. Exurban counties are rural in character, but close enough to major urban centers that residents can commute to a broad range of employment opportunities. The rugged landscape, dependence on extraction industries, and distinct culture of rural eastern Kentucky induced us to treat it as a category separate from the other rural counties in the state.

Classification of Kentucky Counties for Survey of Underemployment

Large Urban/Suburban
Small Urban/Suburban
Exurban
Rural Appalachian
Rural - West/Central
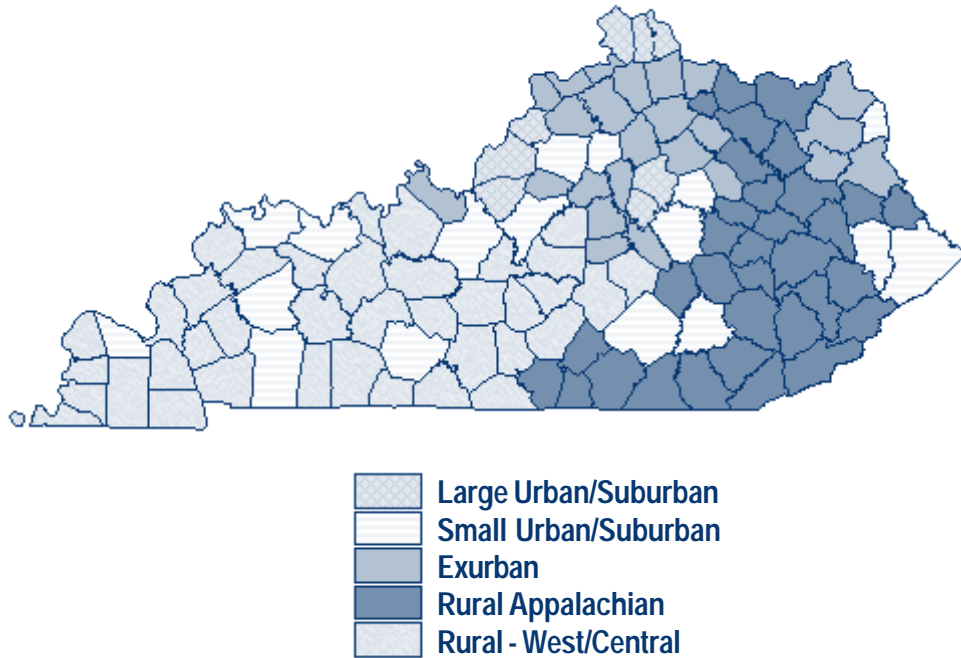
Survey Results

In total there were 3,285 usable responses in the survey, with 630 from each of the five geographic types. The accompanying table provides a summary of results most germane to the discussion of the labor force status of the population by region. Of those respondents statewide, 58 percent were employed, with nearly 15 percent of the employed working part time. While employment rates are lower in rural areas, the proportion of those working full time is slightly higher in rural areas. Moonlighting is more prevalent in large urban areas. Commuting times are higher in rural areas, especially exurban areas where attractive job opportunities exist for those willing to drive to the larger regional cities. Unemployment rates are higher in rural Appalachia but so is the percentage of workers who say they could return to work next week. The percentage of workers in manufacturing is highest in exurban areas and in the rural west. Blue collar production employment is more prevalent in rural areas of the state.

Of those working part-time statewide, 24 percent would prefer full-time work. Overall, this implies that approximately 2 percent of all respondents in the

sample were part-time and would prefer full-time work. We find that 58 to 81 percent of temporary workers want permanent jobs, while 14 to 40 percent of part-time workers want full-time employment. These rates are highest in rural Appalachia. Many of those working part-time are doing so because of family or child care considerations, with respondents citing these reasons most frequently in rural Appalachia. In large urban areas the main reason for not wanting full-time work is that they are currently in school or some form of training.

Over a quarter of full-time workers residing in Kentucky reported underemployment, including a third of workers in exurban counties. However, 40-49 percent of underemployment is reportedly by choice, with the highest rates of underemployment by choice being in the small urban and exurban regions. Of those that are not underemployed by choice, over 90 percent in some regions cited lack of job opportunities. Others cite low wages and geographic location. Depending on the region, child care is cited as a reason for underemployment by 12 to 29 percent of workers. Women are slightly more likely to cite child care as a reason for underemployment than men.

Underemployment in Kentucky Counties

Classification of Kentucky Counties, with 2000 Population, for Survey of Underemployment

Exurban		Rural - Applachian		Rural - West	
Anderson	19,111	Bath	11,085	Adair	17,244
Bourbon	19,360	Bell	30,060	Allen	17,800
Boyle	27,697	Breathitt	16,100	Ballard	8,286
Bracken	8,279	Clay	24,556	Barren	38,033
Carroll	10,155	Clinton	9,634	Breckinridge	18,648
Carter	26,889	Cumberland	7,147	Butler	13,010
Elliott	6,748	Estill	15,307	Caldwell	13,060
Gallatin	7,870	Fleming	13,792	Calloway	34,177
Garrard	14,792	Harlan	33,202	Carlisle	5,351
Grant	22,384	Jackson	13,495	Casey	15,447
Greenup	36,891	Johnson	23,445	Crittenden	9,384
Harrison	17,983	Knott	17,649	Edmonson	11,644
Henry	15,060	Knox	31,795	Fulton	7,752
Lawrence	15,569	Lee	7,916	Graves	37,028
Meade	26,349	Leslie	12,401	Grayson	24,053
Mercer	20,817	Letcher	25,277	Green	11,518
Montgomery	22,554	Lewis	14,092	Hancock	8,392
Nicholas	6,813	McCreary	17,080	Hart	17,445
Owen	10,547	Magoffin	13,332	Hickman	5,262
Pendleton	14,390	Martin	12,578	Larue	13,373
Scott	33,061	Mason	16,800	Lincoln	23,361
Spencer	11,766	Menifee	6,556	Livingston	9,804
Trimble	8,125	Morgan	13,948	Logan	26,573
Woodford	23,208	Owsley	4,858	Lyon	8,080
	426,418	Perry	29,390	McLean	9,938
		Powell	13,237	Marion	18,212
Small Urban /Suburban		Robertson	2,266	Marshall	30,125
		Rockcastle	16,582	Metcalfe	10,037
Boyd	49,752	Rowan	22,094	Monroe	11,756
Christian	72,265	Russell	16,315	Muhlenberg	31,839
Clark	33,144	Wayne	19,923	Ohio	22,916
Daviess	91,545	Whitley	35,865	Simpson	16,405
Floyd	42,441	Wolfe	7,065	Taylor	22,927
Franklin	47,687		554,842	Todd	11,971
Hardin	94,174			Trigg	12,597
Henderson	44,829	**Large Urban /Suburban**		Union	15,637
Hopkins	46,519			Washington	10,916
Laurel	52,715	Boone	85,991	Webster	14,120
McCracken	65,514	Bullitt	61,236		634,121
Madison	70,872	Campbell	88,616		
Nelson	37,477	Fayette	260,512	**State Total**	4,041,769
Pike	68,736	Jefferson	693,604		
Pulaski	56,217	Jessamine	39,041		
Shelby	33,337	Kenton	151,464		
Warren	92,522	Oldham	46,178		
	999,746		1,426,642		

Source: US Census Bureau, 2000 Census of Population and Housing

Summary Statistics on Labor Force Status, by County Type

	Large Urban	Small Urban	Exurban	Rural Appalachian	Rural West
Number of completed surveys	637	658	650	680	662
Response rate	40.9%	40.5%	41.5%	40.2%	43.8%
Percent of all adults who looked for work in past month	4.9%	4.7%	3.8%	6.6%	4.5%
Percent of all adults currently attending school or college	8.6%	9.9%	5.4%	6.6%	7.3%
Percent of adults that work:	64.8%	61.9%	59.5%	48.2%	56.5%
Full-time	83.8%	81.1%	88.1%	85.7%	85.6%
Part-time	16.2%	18.7%	11.9%	14.0%	14.2%
Primary job is:					
Temporary	7.4%	7.4%	7.6%	8.8%	8.6%
Permanent	92.4%	92.4%	90.8%	90.3%	90.4%
Don't know	0.2%	0.2%	1.7%	0.9%	1.0%
Percent of workers with more than one job	9.4%	5.4%	5.4%	4.6%	4.5%
Averager commute time each way (minutes)	18.9	19.6	23.9	22.1	19.9
Average hourly wage of workers	$20.03	$17.68	$16.37	$15.96	$14.42
Percent of all workers for which skills, education, experience fit current job	89.9%	89.4%	89.0%	85.9%	87.8%

Underemployment

	Large Urban	Small Urban	Exurban	Rural Appalachian	Rural West
Percent of those in temporary job wanting permanent job	58.1%	73.3%	66.7%	80.6%	63.6%
Percent of those with part-time job wanting full-time job	13.6%	32.0%	19.6%	40.0%	18.9%
Percent of those with full-time job who are underemployed	28.1%	31.1%	33.8%	29.3%	26.3%
Percent of underemployed with full-time job who are undemployed by choice	39.6%	47.1%	48.6%	40.7%	44.6%

Between 63 and 71 percent of workers say they have attempted to improve or increase their job skills through classes, seminars or training. About a third of Kentucky's workers believe that they could find a better job in three months if they were willing to commute or relocate within a 200-mile region. The average amount of time workers thought it would take to find a better job in the region was 9-12 months.

Model to Predict Underemployment by County

The survey data are representative at only the regional level. That is, we have good statistical information on a sample of respondents in each of five county types, but do not have a sufficient number

Binary Variable	Description
age18to24	1 if person is aged 18 to 24, 0 else
female	1 if person is female, 0 else
black	1 if person is black, 0 else
otherminority	1 if person is other nonwhite category, 0 else
manuf	1 if person works in a manufacturing industry, 0 else
postbach	1 if person has bachelors degree, 0 else
disabled	1 if person is disable, 0 else
govtwork	1 if person works in government, 0 else
selfemp	1 if person is self-employed, 0 else
hours35plus	1 if person works 35 or more hours per week in their primary job, 0 else
hours15to34	1 if person works 15 to 34 hours per week in their primary job, 0 else
hourslt15	1 if person works less than 15 hours per week in their primary job, 0 else
married	1 if the person is married, 0 else
earn25k	1 if person earns $25,000 or more per year, 0 else

of responses to make statements about underemployment in individual counties. Hence, the survey data are used to estimate a model of underemployment by county type and this model is applied to county-specific socioeconomic data to predict underemployment in each county. The explanatory variables chosen are determined, in part, by the variables that are now available from the Decennial Census (SF3) and the forthcoming American Community Surveys. The census data provide counts of people in each county by gender, age, race, industry, occupation and income category. Hence the estimation model is a simple linear regression model, where all variables are indicator variables. When we aggregate to county level, indicator variables become counts, as provided in the census. Since the dependent variable is also an indicator variable, it too provides a prediction of the total number of underemployed.

In order to arrive at a predictive model, a number of specifications were examined. The goal was to include variables which allowed prediction of the subpopulations of interest (male and female in particular), and to include important predictors of

underemployment, while still preserving parsimony. Including irrelevant variables simply taxes the model, while excluding important variables reduces the predictive power.

We used ordinary least squares regressions where both the left and right hand side variables are included as dummy variables. We included fourteen indicator variables on the right hand side, including age, marital status, race, education, industry, and earnings. The explanatory power is relatively low, as is typical for such cross sectional models. A few variables stand out in importance, however. The most important predictors include age, gender, industry of work, and income. In general, women are less likely to be part time seeking full time work than men - as was found in the European surveys. This follows for two reasons: women are less likely than men to be in the labor force, and women working part time have often chosen that status. However, women are more likely to report being underemployed while in a full time job, that is, in a position that does not fully utilize their skills and education. The effect seems to be particularly acute for those women employed in state and federal government positions.

Top Twenty Counties in Terms of Underemployed Persons

Part-time Seeking Full-time Job		Full-time Seeking Better Job	
Jefferson	10,891	Jefferson	51,246
Fayette	4,618	Fayette	19,679
Warren	4,098	Kenton	10,995
Madison	3,250	Hardin	7,154
Hardin	2,916	Warren	7,099
Daviess	2,753	Christian	6,641
Kenton	2,150	Boone	6,160
Christian	2,131	Daviess	6,085
McCracken	1,766	Campbell	6,076
Pike	1,493	Madison	5,025
Pulaski	1,489	Bullitt	4,616
Franklin	1,469	McCracken	4,573
Boyd	1,432	Franklin	3,860
Laurel	1,339	Henderson	3,228
Campbell	1,211	Pulaski	2,945
Hopkins	1,166	Oldham	2,811
Rowan	1,160	Hopkins	2,810
Henderson	1,106	Boyd	2,744
Boone	1,098	Laurel	2,726
Whitley	1,076	Scott	2,687

Estimates of Underemployment by County

In this section we summarize our estimates of the number and type of underemployed persons in each county. The estimates are generated using the regression model just described and the recently released SF3 detailed Census data by county. We estimate that there were a total of 355,000 underemployed persons in Kentucky in 2001. One can see from the following table that there is some interesting variation in the ranking of underemployment by type. For example, Warren and Madison counties rank 3rd and 4th, respectively in the number of part time workers seeking full time jobs, but 5th and 10th in the number of full-time workers seeking better work. Presumably, this is because these counties are dominated by large regional public universities, where state workers are satisfied with their full-time jobs but other workers have trouble finding full-time jobs. Similarly, Pike County ranks 9th in the number of part-time workers seeking full-time jobs, but 23rd in the number of full-time workers seeking better jobs. Coal mining in the county pays well for full time workers, but those jobs

are limited and there are few other industries to match the pay package in coal.

Detailed estimates of underemployment are available on the web site of the Kentucky Cabinet for Workforce Development. The site also contains our recent estimates of fringe benefits, labor shortages, and educational requirements for fast-growing occupations around the state. These latter estimates are based on a large survey of employers conducted at the same time as the household survey discussed above. Combining the employer survey results with an exhaustive administrative database from the state unemployment insurance system, we modeled and predicted key labor demand and benefit information by industry, firm size, and region. For example, one can look up the likely health insurance and retirement benefits paid for full-time hourly workers in the Purchase area. In conclusion, the Cabinet has sponsored the development of important new labor market information around Kentucky, and has made it available at an easy to use web site.

Endnotes

Total Number of Underemployed Persons by County of Residence, 2001

Estimates from Household Survey and Statistical Model

County	#	County	#	County	#	County	#
Adair	1,338	Edmonson	836	Knox	2,447	Nicholas	614
Allen	1,257	Elliott	508	Larue	968	Ohio	1,605
Anderson	1,786	Estill	1,380	Laurel	4,065	Oldham	3,382
Ballard	581	Fayette	24,297	Lawrence	1,152	Owen	916
Barren	2,927	Fleming	1,313	Lee	542	Owsley	362
Bath	998	Floyd	2,513	Leslie	826	Pendleton	1,312
Bell	2,146	Franklin	5,329	Letcher	1,757	Perry	1,984
Boone	7,258	Fulton	650	Lewis	1,281	Pike	4,094
Bourbon	1,816	Gallatin	734	Lincoln	1,698	Powell	1,317
Boyd	4,176	Garrard	1,391	Livingston	653	Pulaski	4,434
Boyle	2,618	Grant	2,191	Logan	2,167	Robertson	233
Bracken	779	Graves	2,616	Lyon	531	Rockcastle	1,563
Breathitt	1,170	Grayson	1,766	McCracken	6,339	Rowan	2,804
Breckinridge	1,315	Green	821	McCreary	1,537	Russell	1,545
Bullitt	5,292	Greenup	3,062	McLean	697	Scott	3,325
Butler	1,006	Hancock	601	Madison	8,275	Shelby	3,649
Caldwell	893	Hardin	10,070	Magoffin	851	Simpson	1,360
Calloway	3,305	Harlan	2,020	Marion	1,500	Spencer	1,136
Campbell	7,287	Harrison	1,682	Marshall	1,981	Taylor	1,815
Carlisle	358	Hart	1,253	Martin	767	Todd	985
Carroll	1,019	Henderson	4,334	Mason	1,550	Trigg	948
Carter	2,282	Henry	1,431	Meade	2,399	Trimble	732
Casey	1,054	Hickman	388	Menifee	537	Union	1,450
Christian	8,772	Hopkins	3,976	Mercer	1,930	Warren	11,197
Clark	3,125	Jackson	1,178	Metcalfe	766	Washington	872
Clay	1,486	Jefferson	62,137	Monroe	903	Wayne	1,859
Clinton	1,038	Jessamine	3,101	Montgomery	2,136	Webster	1,082
Crittenden	593	Johnson	1,875	Morgan	1,032	Whitley	3,276
Cumberland	630	Kenton	13,145	Muhlenberg	2,148	Wolfe	578
Daviess	8,838	Knott	1,186	Nelson	3,655	Woodford	2,259

intellectual contributions of many of its managers and analysts, especially Nancy Laprade, Sherry Sebastian, Earl Turley, Carlos Cracraft, and Don Hogan.

2. The 2000 Census, however, reports much more unemployment around Kentucky than that previously published for March 2000. There were large discrepancies even for the most populated counties. For example, the state workforce cabinet had estimated the unemployment rate in Fayette County to be 1.7 percent, whereas the Census estimate was 5.0 percent. The difference is presumably due to the lack of household-based workforce information available for the Local Area Unemployment Statistics (LAUS) program that is used to generate county and metro area labor force estimates monthly.

3. See, for example, a recent study by The Pathfinders Company, commissioned for Jefferson County (www.kentuckianaworks.org/underemployment.html).

4. The careful reader has no doubt noted that we conducted our survey in late 2001, a year and one-half after the 2000 Census was taken. This was unavoidable given the timing of our research contract, and we do not know how this affects our results. Presumably, there was little change in core socioeconomic variables, such as gender, race, and education levels. Perhaps more worrisome is that a national recession occurred during this period, certainly reducing growth in employment in Kentucky and raising the level of unemployment.

5. See www.census.gov/dmd/www/pdf/d02p for a copy of the long form Census questionnaire. We repeated questions 1, 3 though 9, except for question 27 which asks the respondent to name his or her employer.

6. The surveys were designed and administered by the University of Kentucky Survey Research Center during November and December of 2001. The questionnaire was administered by telephone and was approximately 25 minutes in length. The sample was selected using a statewide Waksberg Random-Digit Dialing method. This gives every household in the sampled regions with a phone an equal probability of being selected. The sample was then pre-filtered for known non-working phone banks and known business numbers. Interviewers asked to talk to the person at each phone number who is age 18 or over and has had the most recent birthday. UK-SRC standard procedures are to attempt each number a minimum of 15 times as scheduled by computer to cover some attempts during all time windows – daytime, evening, and weekend. If an eligible respondent was reached who could not complete the interview at the time, UK-SRC schedules up to 7 callbacks to complete the interview. Finally, UK-SRC attempted one refusal conversion for those reached who initially refuse to participate. The plan was to obtain approximately 625 completed interviews in each of five regions in Kentucky. This provides a margin of error no more than $\pm$ 4% in each region at the 95% confidence level.

"It's up. It's down. Wait, it's back up, ..."
The U.S. Economy in 2002

Christopher J. Waller

The U.S. economy has struggled this year to recover from the recession of 2001. In this article I review the events of 2002 and their effects on macroeconomic variables. I then conjecture scenarios for how the U.S. economy will behave in 2003. I am cautiously optimistic that the U.S. economy will grow at 'normal' rates but sliding back into recession in 2003 is a realistic possibility. If so, then tax cuts remain the only tool to revive the economy.

Introduction

Like a battered champion in a heavyweight-boxing match, the U.S. economy rose, staggered, took a knee then resumed fighting in 2002. The roaring recovery of early January gave way to fear of a 'double-dip' recession by mid summer. But by fall it appeared the U.S. economy had weathered a second recession. Accounting scandals shook the confidence of U.S. investors leading to a major bear market and a massive decline in equity prices. No one escaped intense scrutiny as even untouchable heroes of the 1990s, such as Sir Alan Greenspan, came under fire for not preventing the stock market bubble of the late nineties. Yet despite all of the gloom and doom, the U.S. economy appears to have survived the type of collapse that befell Japan in the early nineties. In this article, I review the U.S. economy's performance in 2002 and make conjectures as to what the future holds for 2003. The upshot is that the U.S. economy should continue on its upward path of recovery but the giddy numbers of the late 1990s will not be seen again for a long time.

GDP

GDP growth in the first quarter of 2002 caught everyone by surprise. GDP jumped a staggering 5% in the first quarter after a respectable 2.7% in 2001:4. Coming out of the 1990 recession the U.S. economy grew 2.3%, 1.0% and 2.2% in the first three quarters after the recession ended. While large growth rates are not uncommon after a severe recession such as 1981, 5% growth is unusual coming out of such a shallow recession as we had in 2001. The massive interest rate cuts enacted by the Federal Reserve during 2001 were finally showing up in the data in the form of spending.

However, any joy from the first quarter numbers was quickly extinguished by the second quarter numbers, which revealed that GDP grew at a very weak 1.0% — substantially below the 'long-run' average growth rate of 2.5-3%. This led to considerable concern that the economy was headed into another recession. A 'double dip' became a genuine possibility (as had occurred in 1980 and 1981.) There was concern that policy-makers were unable to do anything about it since the Fed appeared to be running out of ammunition with the federal funds rate already at 1.75% and Congress being unable to enact an economic recovery plan due to partisan bickering. The Fed stuck to its guns that the economy was recovering and left interest rates unchanged until November 2002 when it cut the fed funds rate another ½ point pushing it to a 40 year low. Preliminary third quarter GDP numbers showed the economy growing at a healthy 3.1% suggesting that we had survived a double dip recession. However, this number may be misleading as to the true health of the economy. Industrial production fell for three-consecutive months in the fall of 2002 and was a factor in the Federal Reserve's decision to lower the fed funds rate after leaving it unchanged for most of the year. Capacity utilization also began to decline in the fall of 2002. However, one has to remember that data gets revised over time and numbers that looked good when first released were later revised such that a very different picture appears. Consider 2000-2001. The initial GDP growth numbers for 2000:3-2001:2 were given as 2.7%, 2%, 1.1% and 1.7%. Despite these respectable numbers the Fed slashed interest rates drastically. After revision this year, the numbers are officially listed as 0.6%, 1.1%, -0.6% and -1.6%. Clearly the Fed knew something that was not reflected in the data then and maybe it does now too. So do not be surprised if the 2002 third quarter numbers are revised but based on past history, the

third-quarter change in real GDP is not likely to be revised below 2.5 percent or above 4.0 percent in the near future.
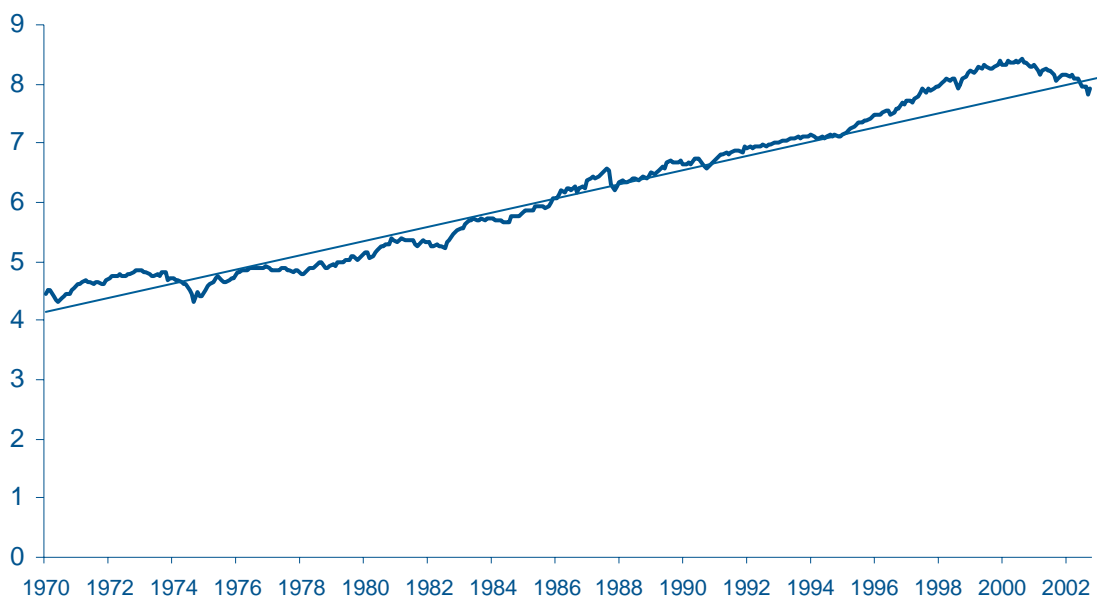
Stock Market

After the recession of late 2001, the U.S. stock market appeared to recover its legs in early 2002. In early March, the Dow Jones Industrial Average was at 10,700 – only 7% lower than its all-time peak. The Enron scandal was in everyone's minds but it was an isolated case of financial reporting chicanery. Enron was like a lightning strike out of the blue – terrible but a rare event. But as time rolled by we heard about WorldCom, Tyco and other cases where accounting smoke and mirrors had been used to buoy stock prices rather than report true corporate earnings. These companies stocks took a beating but overall the market held up reasonably well. But the rare lightning strike had become a lightning storm. And behind every bolt out of the blue sat Arthur Anderson as the auditing firm that had signed off on the earnings reports. Suddenly investors thought – "How many firms does Arthur Anderson audit? Are they all like this?" By late spring, investors no longer had any faith in earnings reports that had fueled the equity boom of the late nineties and the rout was on.

Investors fled the market as fast as they could and the DJIA fell into the mid 7000's twice during the summer and fall – a 25% loss of equity wealth within a six-month period. If the equity boom in the late nineties was all based on false earnings data, then equity prices needed to fall dramatically. Figure 1 plots the monthly average of the S&P 500 from 1970 to present. It is clear from the data that equity prices are now back on their trend growth path. This suggests that equity prices are once again 'properly priced' and poised for appreciation at its historical long run rate.[1]

The massive flight to safety drove up prices on bonds and drove down bond yields. Suddenly, earning 1-2% on a savings account didn't look too bad. Savings deposits at banks jumped a staggering 22% from 2001:10-2002:10 as households moved assets out of the equity markets into safe, liquid assets. This provided the funds in the banking system to finance consumer durables and housing in the second half of 2002.

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[1] Of course, this type of analysis assumes trend reverting behavior in equity prices, which is dangerous since many theoretical models of asset prices, such as random walk models, do not predict trend reverting behavior. Thus, the graph should be interpreted with caution.

FIGURE 1
S&P 500 Monthly Average

Consumption

If historians look back at 2002 and try to explain how the U.S. recovered from the 2001 recession they will clearly see that it was on the backs of the U.S. consumer. Fueled by low interest rates and the mortgage-refinancing boom during the summer, consumer spending grew at impressive quarterly rates (annualized) of 4%, 2.2%, 1.22% and 2.95% over the past year. Quarter to quarter, real personal consumption expenditures increased 4.2 percent in the third quarter, compared with an increase of 1.8 percent in the second quarter. Durable goods

boom waned by the end of the year raising concerns that whatever consumption growth we saw in 2002 could disappear as we move into 2003. Does this refinancing boom imply that households are over indebted? Great concern is paid to the growth in household debt and this somehow means a great disaster is looming for the U.S. But this data ignores the fact that household income rises over time. Economists care about the burden of debt servicing (the ability to repay debt) not the level of debt itself. In the first half of 2002, consumer debt service as a fraction of personal disposable income was a tad over 7.8%. While this is higher than the early nineties (6%), it is no higher than the mid to late 1980s. Thus, how do we reconcile this with the growth in household debt? First, income grows over time which means households can make larger interest payments on

FIGURE 2
Consumer Debt Service Ratio
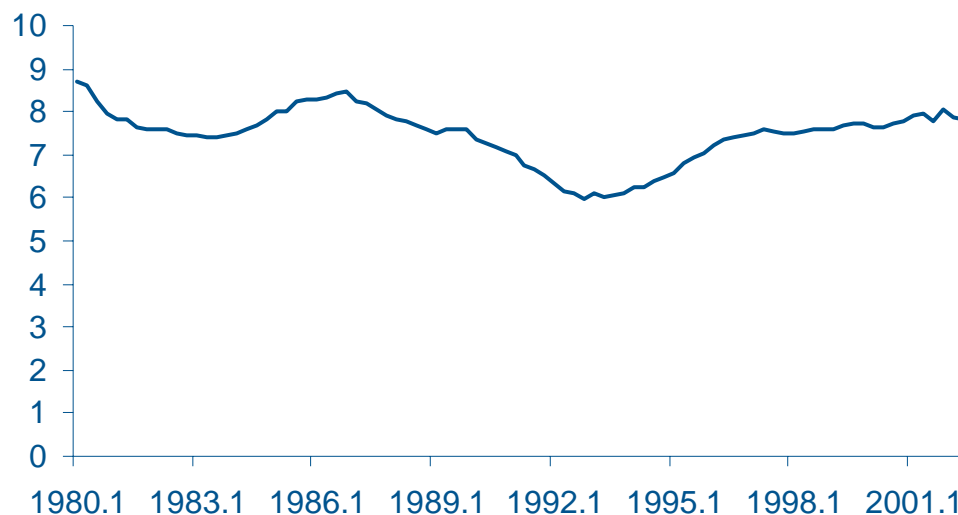
purchases increased an astounding 22.7 percent, compared with an increase of 2.0 percent in the second quarter. Surprisingly, gross private saving increased nearly 20% from 2001:II-2002:II despite the continued consumption growth.

The flight to safety from the equity market into bonds and mortgages during the third quarter drove down bond yields and mortgage rates to levels unseen since the 1960s. This allowed consumers to lower monthly payments and withdraw home equity to maintain consumption spending. Thus, despite the loss of wealth in the stock market, private consumption maintained a solid pace. Whatever negative effect this had on consumption was overwhelmed by the increased purchasing power from the refinancing boom. However, the refinancing

debt and hence can absorb more debt. The other factor is that that mortgage interest rates were substantially higher in the mid 1980's than in 2002. Thus, households could take on less debt in 1985 compared to 2002. But as interest rates fell steadily from 1985 to 2002, households could substantially increase their debt while maintaining the same debt service burden.

Consumer confidence took a nosedive during the summer and fall of 2002. This has generated considerable concern that consumption spending will fall off in coming months. However, there is good reason to believe that the behavior of consumer confidence reveals very little about anything other than what is happening in the stock market these days. In earlier years, consumer confidence was used as a signal about consumer' expectations of job security,

income stability or wage growth all of which would affect consumption behavior. For example, in the early 1980s roughly 10% of U.S. households held equities in their portfolios. Today, the number is over 50%. Thus, more households pay attention to equity prices than in year's past. To illustrate this, I calculated the correlation between the University of Michigan's Consumer Sentiment Index and the S&P 500 before 1990 and after 1990. Prior to 1990, the correlation was .52 whereas it is .73 after 1990. So there is a much stronger correlation between consumer sentiment and the equity market performance in recent years. As a result, the decline in consumer confidence over the summer and fall may simply reflect the decline in equity prices that occurred in the wake of the accounting scandals and nothing more. If the stock market continues its October/November bull run, then consumer confidence will almost certainly pick up in the subsequent months.

Investment

After six consecutive quarters of negative growth, gross private investment finally showed some life in the first half of the year but turned negative again in the third quarter. Non-residential investment contracted during the first half the year. Residential investment grew respectably in the first half but fell off during the third quarter. Inventories jumped 2.6% and 1.3% in the first half of the year after six quarters of contraction as businesses rebuilt good stocks in the belief that the recession was over.

While low mortgage rates have lead to robust housing sales, many are starting to wonder if the housing bubble has been generated by the Federal Reserve's interest rate policies. During 2002, Alan Greenspan came under intense scrutiny regarding the Fed's handling of the equity bubble of the late nineties. Criticism focused on whether the Fed knew an equity bubble was occurring and the Fed did nothing to stop it (by either raising interest rates or margin requirements on stocks). Hence, it is ironic that the same people who criticized the Fed for letting the equity bubble persist are also the ones demanding that the Fed take actions to halt a double-dip recession in 2002.

The Federal Reserve's main weapon against recession is to lower interest rates, which it did vigorously in 2001. But this has created an explosion in housing prices as buyers surged into the housing market to exploit temporarily low mortgage rates. Housing prices increased 7.2% on average in the last year - well above the rate of inflation! In some areas of the country, housing prices jumped 20% or more.

In the Northeast, home prices rose 10.7%; in the West, 8.6%, followed by the South, where prices rose 8.4%. The Midwest saw the smallest increase at 5.1%. This raises the question of what happens once interest rates start going up again - will housing prices collapse? Housing price implosions are not uncommon and have occurred many times in different regions of the country over the last 20 years so it is not an unlikely event in the coming year or two. Given that the typical U.S. household holds most of its wealth in the form of housing equity, this could have more disastrous consequences for consumer spending than any equity market collapse.

While the U.S. consumer appears to have maintained consumption spending over the last year, compared to Europe, consumption spending is far more sensitive in the U.S. than in Europe. Recent research has focused on the composition of GDP movements during a recession and compared the U.S. to Europe. Preliminary evidence suggests that consumption tends to respond more in the U.S. than in Europe during a recession. On the other hand, investment tends to be hit harder in Europe than investment in the U.S. during a recession. Thus, while the U.S. investment data looks bad during 2001-2002, data suggest that it would be far worse in Europe for a similar recession. The policy ramifications of these findings are that policy in the U.S. must focus on shoring up consumer spending during a recession while the opposite is true for Europe. While it may be very difficult for central banks to engage in tailored interest rate policies that favor one group over another, fiscal policy is very capable of doing so. The evidence suggests that fiscal policy should focus on income tax cuts for U.S. households and investment tax credits in Europe.

Government Spending and Taxes

Standard economic wisdom suggests that the federal government should increase spending during a recession to dampen the decline in output. From 2001:3-2002:3, the U.S. government clearly did its part (due also in no small part to the war on terrorism). Real federal government spending increased from $568.9 billion in 2001:3 to $613.1 billion in 2002:3 - a 7.7% increase for the period. However, almost 80% of that ($35 billion) went to national defense. Whether or not defense spending aimed at fighting terrorism stimulates the U.S. economy is an open question. Transfer payments increased 9.8% during the same period as more people relied on welfare and unemployment compensation to get them through tough economic times. State and local governments

also did what they could as spending increased from $1,064.1 billion to $1,098.1 over the same period - a 3.2% increase.

Tax revenues declined, not through tax cuts, but rather through the loss of income on the part of households. Personal tax payments fell $63 billion dollars from 2001:3-2002:3. This decline in tax revenues and the surge in government spending led to a federal government deficit in 2002 for the first time since 1997. After peaking at a surplus of $236 billion in 1997, the federal government ran a $106 billion deficit in 2002. This caused an increase in the federal debt of 7% from 2001:6-2002:6 after declining during 2000. Nevertheless, the debt-to-GDP ratio is still dramatically lower than it was a decade ago. Thus, while the growing budget deficit may appear to tie the hands of fiscal policy-makers, due to the low debt-to-GDP ratio, Congress has substantial room to enact simulative fiscal policy if need be.

Inflation, Unemployment and Productivity

Inflation remained well under control in 2002. The Consumer Price Index increased a mere 1.5% from 2001:9-2002:9. The GDP deflator, a broader measure of inflation increased a mere 1% over 2002. As a result, low inflation gives the monetary and fiscal authorities substantial room to pursue expansionary policies if need be.

The unemployment rate increased through the first half of 2002 hitting 6% for the first time since 1994. However, by the fall of 2002, the unemployment rate began dropping and was at 5.7% by October 2002. The median duration of unemployment also climbed in the first half of the year to 11.7 weeks before falling to 9.6 in October. This is nearly double the 6 weeks duration observed in the last year of the nineties expansion.

After the accounting fraud that devastated the equity markets, many began to question whether the data generated in the late nineties was real or not. Fortunately, the productivity 'miracle' of the nineties appears to be fact not fiction. After slipping during

FIGURE 3

U.S. Productivity Growth
1948-2002
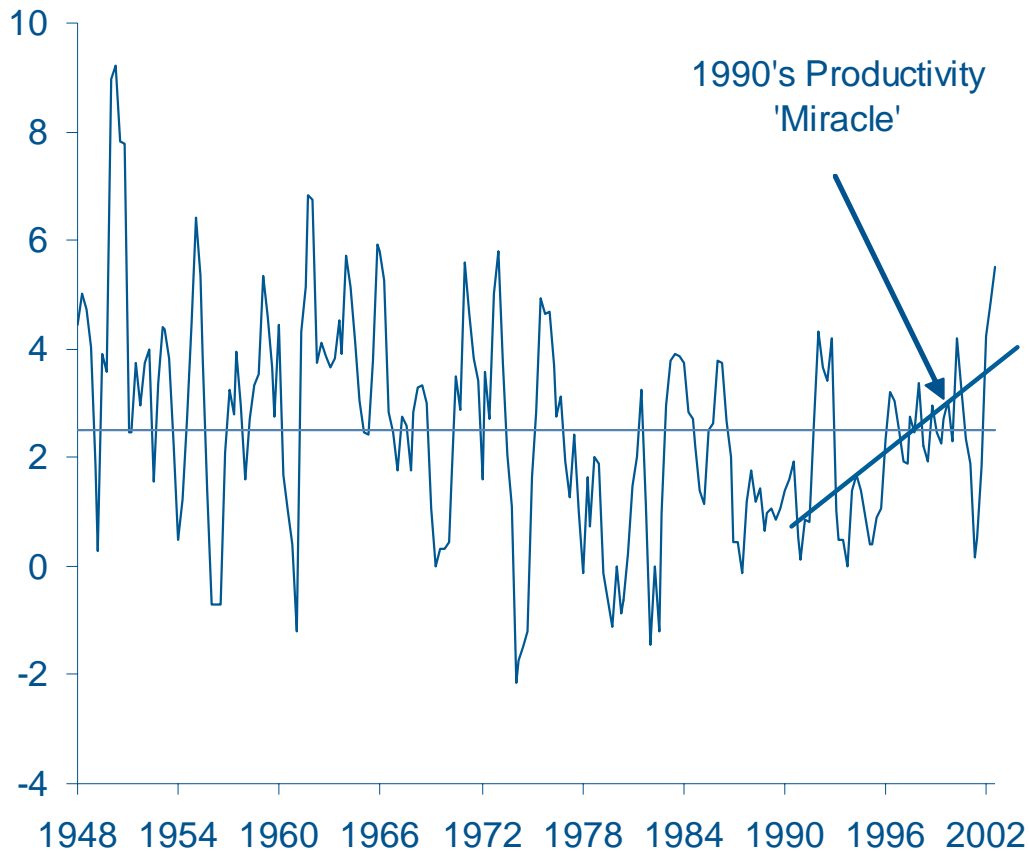
2001 to under 1%, business sector output per labor hour grew at rates of 4.3%, 4.8% and 5.5% in the first three quarters of 2002 from the same quarters in 2001. High productivity growth translates into higher profits, lower prices and higher real wage growth. This will help maintain consumption demand in the future and allow appreciation of equity prices to resume at their 'normal' rate.

Outlook for 2003

The U.S. economy appears to have come out of the 2001 recession in solid but not great shape. The decline in industrial production and capacity utilization at the end of 2002 is a cause of concern and should employment start to decline for several months, then there may well be a double dip recession - just in 2003 rather than 2002.

What could cause a recession to occur in 2003? A new war in Iraq may well accelerate the U.S. economy into another recession. A major terrorist attack on infrastructure would shake U.S. consumer confidence and create uncertainty much as it did in 2001. An oil shock of any major proportions is unlikely unless of disruptions arising from a U.S.-Iraq war. A bursting of housing values could be a detriment to spending but would have to be across the board and not regional.

Should the economy slip into another recession, policy options will be limited. The federal funds rate is already so low that there is little that can be done to drive down interest rates further than they already are. This eliminates the refinancing gains to consumption that we saw in 2002. The Federal Reserve does have other options such as buying longer-term debt or home mortgages but this would require a change in the by-laws of the Federal Reserve. It would also force the Fed to expose its asset portfolio to market risk - something it is very averse to doing. In the near term this is unlikely. Furthermore, some fear that it would send a signal of desperation to the markets. Consequently, any policy stimulus will have to come from fiscal policy. Permanent tax cuts are the best option for stimulating consumption and employment but Congress has to accept the deficits that would follow and allow the debt-to-GDP ratio to rise substantially. With Republican control of Congress, this may be more feasible than it would have been had the Democrats maintained control of the Senate. Also, the surpluses of the late nineties allowed the federal government to reduce the outstanding stock of publicly held debt. Consequently, the increase in the national debt will be starting from a relatively low debt-to-GDP ratio.

On the upside, either a war will not materialize or it will be short and swift. Either case should reduce economic uncertainty and improve economic planning needed for investment decisions. If the accounting scandals are behind us, then the market it poised to start rising again based on fundamentals (such as the continuing productivity boom) rather than financial shenanigans. But prices will not increase any where near what they did in the late nineties. A rise in equity prices will raise consumer confidence and contribute a positive wealth effect on consumption, albeit a small one. A substantial tax cut will most certainly provide a boost to the economic recovery.

In summary, I am cautiously optimistic that the U.S. economy will continue growing in 2003 but at a subdued pace closer to historical averages. But that optimism is tempered by the fact that the current pace of recovery is substantially fragile so that a recession in 2003 is not unreasonable.

Quarterly Forecasts for the Kentucky Economy, 2003 - 2005

Eric C. Thompson

Economic growth is forecast to rebound in Kentucky during most of 2003 as the national economy recovers from the recent recession over the course of the year. Economic growth is then expected to accelerate further in 2004, before moderating in 2005. In 2003, real gross state product in Kentucky is forecast to grow at a 3.2 percent rate, while nominal total personal income is forecast to grow by 5.4 percent (real, inflation adjusted, income growth is forecast at 2.6%), total employment by 2.2 percent, and total population by 0.6 percent.

For the entire 2003 to 2005 period, real gross state product is forecast to average 3.4 percent growth each year, compared to 5.9 percent annual growth for nominal total personal income, and 2.0 percent annual growth in employment. The rate of income growth forecast for the next three years is substantial, and is fueled by strong gains in wage and salary earnings.

Annual employment growth over the three-year period is forecast to average 36,500 jobs each year. The services industry, forecast to add 17,100 jobs each year, is expected by itself to account for nearly half of this employment gain. The retail trade sector is forecast to add 4,500 jobs per year, while the manufacturing sector is forecast to gain 4,700 jobs per year on average from 2003 through 2005.

These forecasts for the Kentucky economy are based on baseline expectations for the national economy as presented in the October 2002 U.S. Economic Outlook *prepared by DRI-WEFA. These baseline forecasts assume a steady recovery in the national economy during 2003, but not the rapid growth frequently observed after recessions. The national unemployment rate is expected to peak during the first quarter of 2003. These baseline forecasts represent the most likely path for the national economy. As for alternative forecasts, DRI-WEFA places a roughly one in three chance of a very weak recovery during the year 2003.*

Introduction

This article describes a forecast for the Kentucky economy for the years 2003 through 2005 produced using the University of Kentucky State Econometric Model. The model, developed in 1995, is used to make quarterly forecasts of the state economy with significant sector detail 3 years into the future. Forecasts are made for many mining, construction, manufacturing, trade, and service industries and government at a detailed level. Population forecasts are made for five-year age groups for both men and women. Income forecasts are presented by source of income including wage and salary income, transfer income, and incomes from dividends, interest, and rents. Annual forecasts are presented below for 2003, 2004 and 2005.

The Kentucky economy is forecast to rebound from the recent recession during the 2003 to 2005 period. The economy will grow steadily during 2003, and growth will accelerate in 2004 before moderating in 2005. Real income growth is forecast to average 3.0 percent per year from 2003 to 2005, while nominal (i.e., unadjusted for inflation) income growth is forecast to grow by 5.9 percent. This strong rate of income growth will be lead by strong gains in wage and salary income, which will be fueled by continuing productivity gains in the economy. Real gross state product is forecast to average 3.4 percent per year over the three-year period, while employment growth is forecast to average 2.0 percent from 2003 through 2005.

Future growth in the Kentucky economy is expected to be broad-based. All major industry groups

besides mining are expected to add employment from 2003 to 2005. Over the entire three-year period, the manufacturing industry is forecast to perform well in Kentucky relative to the nation, with 13 of 20 specific manufacturing industries expected to add employment. Employment and income growth in Kentucky is forecast to encourage net migration into the state and yield an increase in the state's population of 0.6 percent per year, which is somewhat below the rate of population growth expected nationwide.

In general, job and income growth rates in Kentucky are forecast to match national growth rates (see the Appendix for a description of the national forecast). The manufacturing sector, however, is one industry group forecast to grow more quickly in Kentucky than nationally.

Recent Developments

During 2002, both the Kentucky and national economies slowly began to recover from the recession that occurred during 2001. This is reflected in anemic employment growth. The national economy is estimated to have lost employment during the year, with a decline of 0.1 percent. We estimate that employment in Kentucky grew during 2001, by around 1 percent, based on currently available data (through September 2001) and projections. To achieve this growth rate, Kentucky added roughly 22,000 jobs between the fourth quarter of 2001 and the fourth quarter of 2002. This result indicates that the recent tendency for the Kentucky economy to outperform the national economy appears to have persisted even during this recession period.

Kentucky managed to add employment in 2002 because growth in the retail trade and services industries offset losses in the manufacturing industry. The services industry is expected to have grown at 2.4 percent and added 11,900 jobs in 2002. Business and health services lead the way in service industry growth. The retail trade industry is expected to have grown at a rapid 1.6 percent rate and added 5,300 jobs. The manufacturing industry is estimated to have lost 1,400 jobs in Kentucky in 2002, while the coal mining industry lost 600 jobs.

Overall job growth in Kentucky also contributed to modest population growth. Population in Kentucky is estimated to have grown by 0.6 percent during 2002.[1]

The Next Year

The 2003 forecast calls for a steady recovery in the Kentucky and national economy over the course of the year. Growth rates in Kentucky are forecast to match forecast growth for the nation as a whole.

Real value-added output, or real gross state product, is forecast to grow by 3.2 percent in Kentucky in 2003. Total employment is forecast to grow by 2.2 percent during the year. This will match the employment increase forecast for the nation during 2003. Real total personal income growth is forecast to reach a 2.6 percent rate paced by a rapid 3.6 percent growth rate in wage and salary earnings. Nominal total personal income is forecast to grow by 5.4% in 2003.

Despite this forecast growth in employment and income, population growth in Kentucky is expected to fall below national levels in the 2003. Population is forecast to increase by 23,100 during the year. This 0.6 percent rate of growth is below the nationwide forecast for population growth of 0.9 percent annually. Slower growth rates forecast for Kentucky reflect a lower natural rate of population growth in the state. A lower natural rate results from lower birth rates and higher mortality rates.

Just as in previous years, the greatest growth among industries in 2003 is forecast for services and retail trade. Service industry employment is forecast to grow by 4.1 percent in 2003, adding a total of 20,700 jobs. Business services, growing at 6.7 percent, and health services, growing at 5.4 percent, are forecast to add the most new service jobs. Retail trade employment is forecast to grow at 2.2 percent in 2003, adding 7,600 new jobs.

The manufacturing industry is expected to gain about 1,000 jobs in Kentucky in the year 2003, for a 0.3 percent growth rate. Fabricated metals, wood and furniture products, plastic products, and transportation equipment are forecast to be among the growing manufacturing industries, while textiles, tobacco products, and non-electric machinery are forecast lose employment. The coal mining industry is forecast to lose jobs again in 2003, with a decline in 400 jobs, or 2.3 percent.

The Three-Year Forecast

After steady growth in 2003, growth in the Kentucky economy is forecast to accelerate in 2004,

before moderating again in 2005. Growth in real gross state product is forecast to rise to 3.9 in 2004 from 3.2 percent growth in 2003. Growth in real gross state product is forecast to moderate to 3.1% in 2005. Total employment growth is forecast to increase from a 2.2 percent growth rate in 2003 to 2.4 percent in 2004 before falling to 1.3 percent growth in 2005. Real total personal income is forecast to grow at 3.1 percent and 3.3 percent in 2004 and 2005 after growing 2.6 percent in 2003. Nominal total personal income is forecast to grow by over 6 percent in 2004 and 2005.

Forecast growth rates for both income and employment meet national forecasts. Population growth in Kentucky is expected to fall short of national growth rates. The Kentucky statewide unemployment rate is expected to rise to 6.1 percent in 2003 before falling back to 5.5 percent in 2004, and 5.1 percent in 2005. The following three sections discuss the growth of industries, unemployment, income, and population in more detail.

Gross State Product and Employment

Gross state product (GSP), the measure of value-added output, is a comprehensive measure of economic activity that includes capital consumption, profits, business tax payments, as well as employment and earnings. As a result, analysis of gross state product data can sometimes lead to a different perspective than analysis of a less comprehensive measure, such as employment growth. In particular, while more rapid job growth in services is evidence of the emerging service economy, analysis of gross state product data reiterates the crucial role that manufacturing and other goods-producing industries play in the overall economy.

Manufacturing and other goods-producing industries (such as agriculture, mining, and construction) continue to account for a substantial share of gross state product. Manufacturing accounted for 26.0 percent of real gross state product in the fourth quarter of 2002, while goods-producing industries as a whole accounted for 34.2 percent. The remaining 65.8 percent of real

gross state product was divided among other industries. For example, retail and wholesale trade accounted for 17.2 percent, and services accounted for 16.6 percent.

Manufacturing and other goods-producing industries are forecast to account for a somewhat larger share of future growth in Kentucky real GSP, portending an even more important role in the economy in the future. As Figure 1 shows, manufacturing is forecast to account for 40.0 percent of growth in real GSP from 2003 through 2005. All goods-producing industries are forecast to account for 46.5 percent of growth in real GSP. Growth in manufacturing, mining, agriculture, and construction will be a crucial engine for growth in the Kentucky economy in years to come.

Figure 1 also shows the relative significance of trade and services for growth in real GSP. These industries are forecast to play a significant but secondary role in real GSP growth. Retail and wholesale trade are forecast to account for 20.2 percent of real GSP growth from 2003 through 2005, while services are forecast to account for 16.6 percent of growth. A more detailed analysis of real GSP

FIGURE 1

Share of Kentucky Gross State Product Growth in Selected Industry Groups, 2003 - 2005
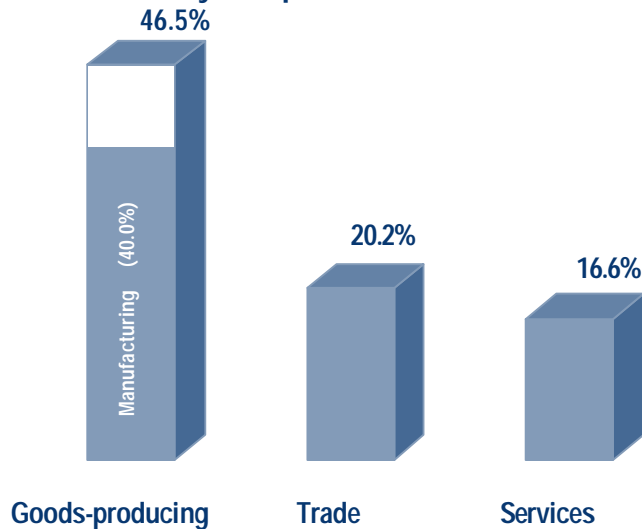
forecasts is presented in Table 1. Table 1 provides real GSP growth forecasts for each major industry group.

Strong growth in real GSP is consistent with growing employment. However, an increase in real

GSP does not guarantee that employment also will increase. Productivity, or real GSP per worker, can grow rapidly enough in some industries that total employment will decline even as real GSP rises. This trend is occurring nationally in a number of goods-producing industries.

TABLE 1
Real Gross State Product (GSP) by Industry in Kentucky, 2003- 2005

	Real GSP 4th Q 2002 ($mil)	Annual Growth Rate			Annual Averages Growth ($mil)	Growth Rate
		2003	2004	2005		
Total	$109,876	3.2%	3.9%	3.1%	$3,880	3.4%
Agriculture	1,907	3.9	2.3	-0.9	34	1.8
Mining	2,753	4.9	4.8	3.2	124	4.3
Construction	4,347	1.7	2.9	1.6	92	2.1
Manufacturing	28,585	4.4	7.1	4.1	1,554	5.2
TCPU	8,863	4.0	4.2	3.7	366	4.0
Trade	18,895	4.2	3.7	4.0	783	4.0
FIRE	11,723	1.0	1.1	1.0	123	1.0
Services	18,190	2.8	3.6	3.9	646	3.4
Government	14,613	1.4	0.9	0.9	157	1.1

TCPU = Transportation, Communications, and Public Utilities   FIRE = Finance, Insurance, and Real Estate

The overall pattern, however, is for growth in goods-producing industry employment through 2005. Figure 2 shows indices for employment in 2003

through 2005 compared to employment in the fourth quarter of 2002. As depicted, goods-producing employment is forecast to rise in the United States from the fourth quarter of 2002 through the first quarter of 2005. The cumulative increase is nearly 4 percent. A similar pattern is observed in Kentucky, except goods-producing employment is forecast to rise more quickly. In Kentucky, as Figure 2 shows, goods-producing employment rises by nearly 5 percent by the fourth quarter of 2005.

Nongoods-producing industries are forecast to grow at roughly the same rate in Kentucky as nationally. Figure 2 also shows growth indices for nongoods-producing industries like services, retail trade, wholesale trade, and government in Kentucky and the United States. Nongoods-producing industries overall will grow marginally more slowly in Kentucky than nationally. The growth rate in Kentucky is forecast

FIGURE 2

Indices of Employment Forecasts for Goods and Nongoods-Producing Industries in Kentucky and the United States, 2003 - 2005
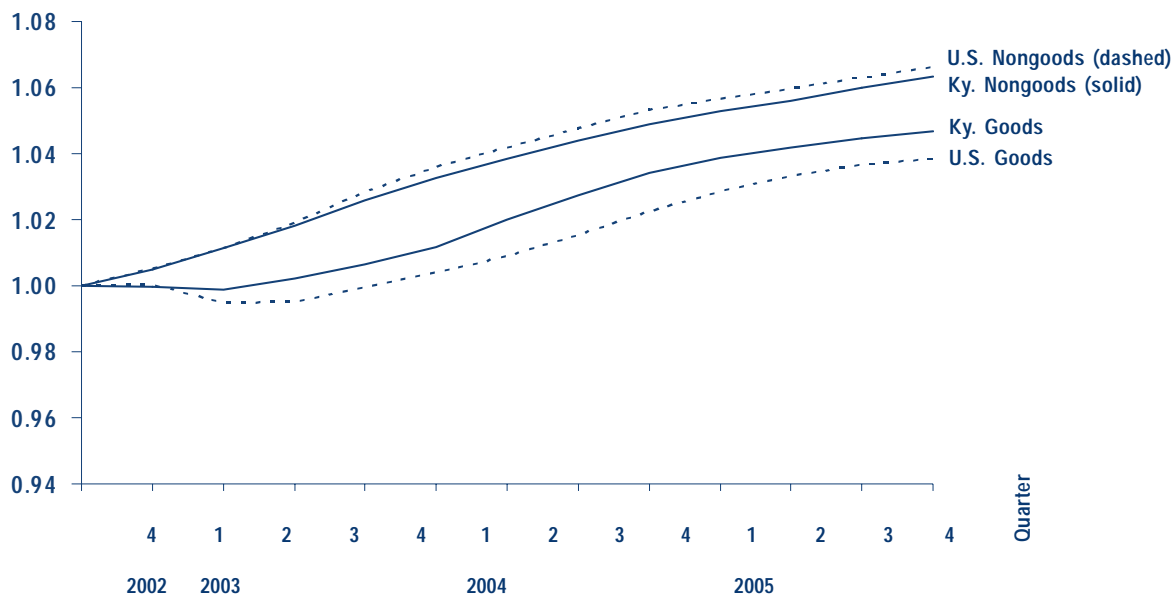
to average 2.1 percent per year over the three-year period compared to a 2.2 percent for the United States.

Unemployment

Unemployment levels are expected to rise in 2003 in response to the slow pace of economic recovery in 2002, although conditions are expected to improve later in the year as recovery accelerates in 2003. The peak unemployment rate is anticipated in the first quarter of 2003.

Figure 3 shows the forecast average annual rate of unemployment in Kentucky for 2002 through 2005. The average annual unemployment rate is expected to have reached 5.4 percent in 2002, before rising to an annual average 6.1 percent in 2003. More rapid economic growth in 2004 and 2005 is expected to cause unemployment to drop during those years. The unemployment rate is forecast to drop to 5.1 percent by 2005.

FIGURE 3
Forecast Annual Unemployment Rates for Kentucky: 2002-2005
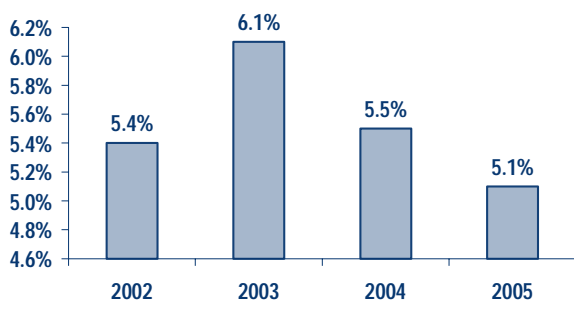
Income

Income growth in Kentucky is forecast to be similar to national growth over the next three years. The growth rate in nominal personal income is forecast to average 5.9 percent in Kentucky and 5.8 percent in the United States over the period. The growth in real, inflation adjusted, total personal income is forecast to average 3.0% in Kentucky from 2003 through 2005. Total income growth in Kentucky will match the national rate despite forecasts of somewhat slower population growth in Kentucky. This suggests faster growth in income per person in

Kentucky. From 2003 through 2005, growth in nominal per capita, or per person, income in Kentucky is forecast to average 5.3 percent versus 4.9 percent in the nation. Both figures suggest significant growth in personal income and the standard of living in Kentucky and the nation in the next few years despite recent recession conditions.

Population

Population growth in Kentucky has been steady throughout the last decade.[2] Rising in-migration, reduced outmigration, or both, have lead to positive net migration, which is the number of persons migrating to Kentucky minus the number migrating out of the state.

With more persons moving to the state than leaving, population growth has exhibited the kind of steady growth seen elsewhere in the nation (net migration also is positive for the nation as a whole). However, the forecast population growth rate for Kentucky, at 0.6 percent per year, is expected to fall below the national average growth rate from 2003 to 2005. This figure translates into an average increase of 22,900 residents each year.

This growth, however, is not forecast in all population groups. As nationally, Kentucky's forecast shows an aging population. The number of persons age 30 to 44 in Kentucky is forecast to decline slightly over the next three years, and growth is very modest in other younger age groups. At the same time, more Kentuckians will shift into older age cohorts. The population of 55 to 64 year-olds is expected to grow by 4.1 percent per year from 2003 through 2005. Population is also forecast to grow quickly among the oldest portion of the population. The number of persons over age 85 should grow by 5.6 percent per year over the next three years.

Forecast Detail

The aggregate growth forecast for the Kentucky economy is not the result of a consistent growth rate among all industries, or sources of income. Employment in many industries is forecast to grow much more rapidly than total employment, while some manufacturing and mining industries will not grow at all. The following sections examine growth in industries and in sources of income.

TABLE 2

Growth and Growth Rates for Nonfarm Employment in Kentucky by Industry, 2003 - 2005

	Employment 4th Q 2002	Annual Growth			Average Annual Growth		
		2003	2004	2005	Ky.	Ky.%	U.S.%
Total	1,835,964	2.2%	2.4%	1.3%	36,530	2.0%	2.0%
GOODS-PRODUCING	406,816	0.7%	2.7%	1.2%	6,358	1.5%	1.3%
Mining	19,835	-1.5%	-2.5%	-3.9%	-517	-2.7%	-0.9%
Coal	15,675	-2.3%	-3.4%	-5.1%	-542	-3.6%	NA
Construction	88,677	2.2%	3.0%	2.1%	2,216	2.4%	2.9%
Manufacturing	298,304	0.3%	3.0%	1.3%	4,659	1.5%	0.7%
Food Products	28,751	0.7%	1.6%	2.9%	495	1.7%	1.5%
Tobacco	2,174	-7.2%	-7.1%	-7.7%	-148	-7.4%	-2.0%
Textiles	3,777	-2.9%	-3.2%	-3.1%	-112	-3.1%	-4.5%
Apparel	13,932	3.1%	0.1%	-3.5%	-20	-0.1%	-1.0%
Wood	15,666	2.2%	4.8%	3.1%	540	3.3%	1.2%
Furniture	6,020	3.4%	7.0%	2.9%	278	4.4%	3.5%
Paper products	11,585	2.5%	4.0%	2.7%	366	3.1%	1.0%
Printing and publishing	22,025	2.1%	4.0%	2.9%	676	3.0%	2.6%
Chemicals	14,871	-4.8%	-1.4%	-1.6%	-377	-2.6%	-2.0%
Petroleum and coal refining	1,662	-1.7%	-1.7%	-2.0%	-29	-1.8%	1.7%
Rubber and plastic products	18,856	2.2%	3.3%	0.2%	359	1.9%	2.0%
Leather products	818	-16.5%	-7.1%	-6.9%	-76	-10.3%	-5.6%
Stone, clay, and glass products	10,606	3.7%	1.1%	2.1%	247	2.3%	0.4%
Primary metals	18,520	-1.8%	1.6%	1.0%	48	0.3%	2.8%
Fabricated metals	27,476	3.1%	4.7%	2.9%	1,006	3.5%	1.4%
Non-electric machinery	30,523	-5.6%	2.9%	-0.6%	-348	-1.2%	-1.1%
Electric machinery	19,661	3.0%	0.0%	1.1%	269	1.4%	0.5%
Transportation equipment	42,932	-0.2%	7.2%	2.2%	1,327	3.0%	-0.5%
Instruments and related products	4,039	3.5%	3.2%	2.8%	132	3.2%	2.2%
Miscellaneous Maufacturing	4,409	-0.6%	0.6%	1.7%	26	0.6%	1.9%
NONGOODS-PRODUCING	1,429,148	2.6%	2.3%	1.4%	30,172	2.1%	2.2%
TCPU	104,994	2.4%	2.7%	1.6%	2,401	2.2%	3.3%
Trade	429,789	2.1%	1.5%	0.6%	6,119	1.4%	1.1%
Wholesale trade	85,960	1.6%	2.3%	1.8%	1,651	1.9%	2.3%
Retail trade	343,830	2.2%	1.3%	0.4%	4,467	1.3%	0.7%
FIRE	75,579	1.5%	2.0%	1.4%	1,267	1.6%	2.8%
Services	500,147	4.1%	3.6%	2.1%	17,056	3.3%	3.3%
Business services	104,103	6.7%	6.5%	3.8%	6,202	5.6%	NA
Health services	161,528	5.4%	2.9%	0.4%	4,819	2.9%	2.7%
Government	318,638	1.1%	1.0%	1.0%	3,329	1.0%	0.9%
Federal	38,286	3.7%	3.1%	2.5%	1,232	3.1%	0.9%
State and local	280,352	0.8%	0.7%	0.7%	2,097	0.7%	0.9%

TCPU = Transportation, Communications, and Public Utilities   FIRE = Finance, Insurance, and Real Estate

Employment

Forecast employment growth among Kentucky industries varies substantially, but is broad-based. Most industries are forecast to add employment, with the exception of coal mining and a number of manufacturing industries. As nationally, the majority of job growth is forecast in retail trade and services.

Total manufacturing employment is forecast to rise at an annual rate of 1.5 percent in Kentucky from 2003 through 2005, which translates to an increase of roughly 4,700 jobs per year. The performance of the industry, however, will vary significantly from year to year. Manufacturing employment is forecast to grow by just 0.3 percent in 2003. Manufacturing employment growth is forecast to reach 3.0 percent in 2004, before the growth rate drops back to 1.3 percent in 2005. This pattern reflects the acceleration of the U.S. and Kentucky economic growth through 2004, followed by moderation in 2005.

Throughout the 3-year period, Kentucky manufacturing is forecast to outperform the national manufacturing industry. Kentucky's average manufacturing job growth of 1.5 percent compares favorably with the national forecast of a 0.7 percent annual increase in manufacturing employment from 2003 through 2005.

As is seen in Table 2, two-thirds of the state's manufacturing industries are forecast to add jobs in the next three years. Specifically, 13 of the 20 manufacturing industries are forecast to add jobs. This matches the national forecast that also calls for 13 manufacturing industries to add jobs. The fastest rates of employment growth for Kentucky manufacturing industries are forecast for wood products and furniture, fabricated metals, transportation equipment, paper products, and printing. The fastest rates of job loss are forecast for tobacco products, leather products, textiles, and chemical products.

Employment in the construction industry in Kentucky is forecast to grow by 2.4 percent per year. Coal mining employment is forecast to decline during each of the next three years, with an average loss of 500 jobs per year.

Most nongoods-producing industries in Kentucky such as services are expected to match their national counterparts in terms of job growth. The services industry is forecast to add employment at a rate of 3.3 percent per year in Kentucky, and 3.3 percent nationally. The service industry can achieve such rapid growth in part because it contains some of the fastest growing portions of the economy such as business services and professional services. Table 2 indicates that business services are forecast to grow by 5.6 percent per year from 2003 through 2005. The health care industry is forecast to add employment at a 2.9 percent rate per year. Since health care is such a large industry, a 2.9 percent growth rate translates into 4,800 new jobs per year.

A faster rate of growth is clearly seen in retail and wholesale trade employment. Retail trade employment is forecast to grow by 1.3 percent in Kentucky compared to 0.7 percent nationally over the next three years. Kentucky is also forecast to have faster rates of growth in government employment. Government employment is forecast to grow by 1.0 percent annually in Kentucky compared to 0.9 percent in the United States overall. The finance, insurance, and real estate (FIRE) industry is forecast to grow by 1.6 percent each year in Kentucky compared to 2.8 percent nationally. The transportation, communications, and public utilities (TCPU) industry is forecast to add employment at a 2.2 percent annual rate in Kentucky and a 3.3 percent rate in the nation.

In summary, most trade and service industries are forecast to grow as fast in Kentucky as nationally. The state also is forecast to benefit from a better performing manufacturing industry than the nation.

Income

Nominal total personal income is forecast to grow steadily in both Kentucky and the nation. As seen in Table 3, nominal income growth is forecast to average 5.9 percent per year in Kentucky from 2003 through 2005, and 5.8 percent nationally. Real total personal income growth is forecast to average 3.0 percent in Kentucky and 2.9 percent in the nation. Growth in nominal wage and salary income is forecast to reach roughly 6.9 percent per year in Kentucky and 6.5 percent nationwide. Other types of labor income such as benefits income (other labor income) and proprietor's income also are forecast to grow rapidly in Kentucky and the nation.

Nominal wage and salary income growth of 6.9 percent per year would translate into nearly $4,330

million of nominal income growth per year from 2003 to 2005. Nominal benefits income (other labor income) is forecast to grow by 6.5 percent per year in Kentucky. This 6.5 percent increase is forecast to yield $540 million in new income each year. Nominal proprietors' income is forecast to grow by 6.0 percent per year in Kentucky from 2003 to 2005, adding $510 million per year to state income. Nominal proprietor's income is forecast to grow by 6.1 percent per year nationally. Together, these three sources of working

forecast employment growth is expected to be an increase in workers from nearby states finding work in Kentucky, a decrease in the number of Kentuckians working in nearby states, or both.

Risks to the Forecast

The forecast presented for the Kentucky economy is based in part on the baseline October 2002 forecast

TABLE 3
Growth and Growth Rates for Personal Income and its Components in Kentucky, 2003 - 2005

Nominal Income Source	Income 4th Q 2002 ($mil)	Annual Growth Rate			Annual Averages		
		2003	2004	2005	Growth ($mil)	Growth Rate Ky. %	U.S.%
Total personal income	$109,088	5.4%	6.3%	6.1%	$6,826	5.9%	5.8%
Wage and salary income	58,272	6.4%	7.5%	6.9%	4,329	6.9%	6.5%
Other labor income (benefits)	7,793	5.8%	6.9%	6.7%	537	6.5%	5.3%
Proprietor's income	7,929	9.2%	6.2%	2.7%	506	6.0%	6.1%
Residential adjustment	-1,206	5.7%	7.5%	5.8%	-81	6.3%	NA
Contributions to social insurance	4,548	7.4%	8.3%	6.5%	362	7.4%	6.5%
Transfer income	20,308	3.1%	4.1%	5.2%	869	4.1%	4.3%
Dividends, interest, rent	18,047	3.4%	5.0%	6.1%	916	4.8%	5.1%
Per capita income	$26,640	4.8%	5.7%	5.5%	$1,493	5.3%	4.9%
Real Total Personal Income	$59,859	2.6%	3.1%	3.3%	$1,853	3.0%	2.9%

income are forecast to account for $5,370 million of $6,830 million of nominal income growth per year in Kentucky. Earnings from work will be the key source for income growth in Kentucky. After subtracting out payments on wages for social insurance, earnings from work will account for 73.4 percent of income growth in the state.

Nominal transfer income in Kentucky is forecast to grow at an average rate of 4.1 percent over the next three years compared to 4.3 percent nationally. This rate of growth translates into a forecast growth of transfer income of $870 million per year in Kentucky. Dividend, interest, and rent (DIR) income is forecast to grow by $920 million per year in Kentucky from 2003 to 2005.

There is also a continued decline forecast for Kentucky's residential adjustment over the next few years. Residential adjustment is the difference between what Kentuckians earn working in other states minus what residents of other states earn working in Kentucky. The decline in residential adjustment indicates that one result of Kentucky's

for the United States economy produced by DRI-WEFA. This baseline national forecast represents the most likely scenario for the economy over the next three years. Use of this baseline national forecast implies that the Kentucky forecast is also a baseline forecast, the most likely scenario for the state's economy among a group of possible scenarios. The national economy has other potential outcomes, which in turn could be played out in the Kentucky economy. Two alternative national scenarios are examined below.

Under the first alternative scenario, a stronger than expected economic recovery unfolds during 2003. A stronger recovery is driven by a quick recovery in business and consumer confidence as opposed to the steady recovery envisioned in the baseline scenario. Real GDP growth hits 4 percent during 2003 rather than 3 percent as in the baseline. This optimistic alternative scenario is considered less likely than the more pessimistic alternative scenario, which is described below.

Under the second alternative scenario, businesses remain more cautious than in the baseline scenario due to weak profits. Businesses keep a tight rein on both investment and new hiring. A continued weak job market hurts consumer confidence, and the national unemployment rate peaks at 6.5 percent. Despite very weak economic growth, the economy avoids recession thanks to increases in federal spending.

Conclusion

Economic growth in Kentucky is forecast to accelerate through 2004, before the rate of growth moderates in 2005. This pattern is expected for growth in both gross state product and employment. Population growth is forecast to remain steady throughout the period.

Most industries are forecast to add employment, with the exception of coal mining and a number of manufacturing industries. The services and retail trade industries are forecast to add the most new jobs during the next three years. Together, these two industries are forecast to add 21,500 of the 36,500 net new jobs expected in the Kentucky economy each year. The manufacturing industry as a whole is forecast to gain 4,700 net jobs per year from 2003 through 2005. Manufacturing remains a key to growth in the state economy. The manufacturing sector is forecast to account for 40.0 percent of growth in real gross state product in Kentucky. Gross state product is a broader measure of an industry's contribution to the economy than employment.

Growth in the Kentucky economy is forecast to match growth in the national economy for most employment and income measures. Manufacturing employment, however, is forecast to grow by a 1.5 percent annual rate in Kentucky from 2003 to 2005, while nationally it is expected to grow by 0.7 percent annually. Growth rates in Kentucky for retail trade, services, and government are forecast to meet or exceed growth rates for the United States. Growth rates for real wages and salaries are forecast to be similar in Kentucky and the United States. Population growth in Kentucky is forecast to fall below national growth rates, while per capita income is forecast to grow slightly faster in Kentucky.

Appendix: National Forecast

The forecast for Kentucky is based on the baseline forecast for the national economy in the DRI-WEFA publication *The U.S. Economy* for October 2002. National variables forecast by DRI-WEFA are key variables in nearly every part of the University of Kentucky State Econometric Model.[3]

The baseline national forecast from DRI-WEFA depicts a national economy that grows steadily in 2003 and rapidly in 2004, before the rate of growth moderates in 2005. Payroll employment is forecast to grow by 2.3 percent from the fourth quarter of 2002 through the fourth quarter of 2003. Payroll employment is forecast to grow by 2.4 percent in 2004 and 1.3 percent in 2005. The national unemployment rate is forecast to average 5.9 percent in 2003, 5.3 percent in 2004, and 5.0 percent in 2005.

Slower growth in consumer spending is expected to moderate growth in 2003, but growth should accelerate further in 2004 as investment and industrial production recover. It is assumed that there are no major negative international developments, other than the possibility of war with Iraq. Consumer confidence is expected to recover slowly in 2003. The federal government is expected to run an annual budget deficit from between $150 to $250 billion during the forecast period. Inflation is expected to hit 2.9 percent in 2003, 2004, and 2005.

Endnotes

1. Population data for Kentucky are not yet available for the first three quarters of 2002. Thus, population values need to be forecast for the first three quarters of 2002 based on the available Kentucky employment data. In particular, Kentucky employment growth and unemployment data are key inputs into forecasts of the migration component of population. Population growth for the last quarter of 2002 is forecast along with other Kentucky variables such as income.

2. Moderate series birth and survival rates were taken from Michael Price, Thomas Sawyer, and Martye Scobee, *How Many Kentuckians: Population Forecast 1995-2020*, Population Research, Kentucky State Data Center, University of Louisville, 1993.

Endnotes (continued)

3. National industrial production and productivity by industry are variables in manufacturing and mining, gross state product, and employment equations. National consumer spending and industry employment variables are important inputs for retail and service equations. National data on income growth by source is a key variable in income growth equations.

Employer Sponsored Health Insurance: Examining Kentucky

John Perry

In this article, the availability and general characteristics of employer sponsored health insurance for working Kentuckians are examined. Using recent survey data of Kentucky businesses, individual health insurance coverage, dependent health insurance coverage, and retiree health insurance coverage offered by employers are explored. All are examined at the State, Area Development District (ADD) and industry levels for both salaried and hourly full-time employees. In general, there are notable differences in health insurance availability for workers in Kentucky by both ADD and industry group for individual insurance. This variability increases substantially when looking at the percent of plan cost covered by employers and employee participation rates. Further, for both dependent and retiree health insurance, this finding is magnified. In all, this article offers a snapshot of the world in 2002 and demonstrates the differences in employer sponsored health insurance that exist throughout Kentucky

INTRODUCTION

Health insurance is a hot topic and has garnered increasing attention from the popular media as well as policy makers and academics. In this article, health insurance availability for working Kentuckians is examined. Using recent survey data of Kentucky businesses, we examine individual insurance coverage, dependent coverage, and retiree coverage offered by employers. All are examined at the State, Area Development District (ADD) and industry levels for both salaried and hourly full-time employees. This examination is done in five parts. The first provides a description of the data. The second deals with individual group health insurance, the most basic employer health insurance offering. The third part looks at dependent coverage, and in the forth, retiree health insurance is addressed. The final section concludes with short remarks about what was discovered from these new micro-level data of Kentucky.

In all, it is found that there is a variety of health insurance availability for workers in Kentucky by both ADD and industry group for individual insurance. This variability increases when looking at the percent of cost covered by employers and participation. Further, for both dependent and retiree health insurance, this finding is magnified. While there is variety, the results indicate that coverage is offered more times than not for individual and dependent insurance and much less so for retiree insurance. In general, as would be expected, individual coverage has a much higher participation

and employer contribution rate than either dependent or retiree coverage throughout the state.

I. THE DATA

The data examined in this article were collected for the Kentucky Cabinet for Workforce Development by the Survey Research Center in the Urban Studies Institute at the University of Louisville. The survey instrument was designed by the University of Kentucky - University of Louisville Consortium Research Team in consultation with regional and local organizations. In total, there were 3,438 responses to the survey. These firms were classified into 15 Area Development Districts (ADD) based on their county of address and 19 industry groupings based on their SIC Codes (Standard Industrial Classification as described by the U.S. Department of Labor, Occupational Safety and Health Administration). For the industry groupings, similar industries were grouped together to obtain reasonable sample sizes while retaining the uniqueness that may exist between different industries. Table 1 lists the 19 different groupings and 15 different ADD's.

II. INDIVIDUAL COVERAGE

The most basic of health insurance offerings is individual coverage. In this, only the employee is offered coverage. There is no coverage offered to family members or dependents. Something that should be

TABLE 1   Data Groupings

Area Development Districts (ADD)	Industry Groups
Purchase	Agriculture, Forestry, Fishing
Pennyrile	Mining
Green River	Construction
Barren River	Durable Manufacturing
Lincoln Trail	Nondurable Manufacturing
KIPDA	Transportation, Communications, Public Utilities
Northern Kentucky	Wholesale Trade - Durables
Buffalo Trace	Wholesale Trade - Nondurables
Gateway	Retail Trade - Durables
FIVCO	General Merchandise and Food Retail
Big Sandy	Automotive and Accessories Retail
Kentucky River	Eating and Drinking Places
Cumberland Valley	Finance, Insurance, Real Estate
Lake Cumberland	Entertainment Related Services
Bluegrass	Business Services
	Professional Services
	Personal and Health Services
	Social and Community Organizations
	Public Administration

addressed early is that there is a variety of health plans with wide differences in costs and benefits. These differences are beyond the scope of this article. Rather, the focus is whether any health insurance plan was offered. In addition, some simple characteristics of participation and costs are given attention.

A. Individual Coverage: The State

For the state as a whole, 88.9% of salaried full time employees are offered health insurance.

For hourly workers, the level is slightly lower at 85.6%. Thus, of working Kentukians, more than 85% are offered some form of individual health benefit.

While an overwhelming majority of workers are offered this benefit, further questions remain: namely, how much of the health benefit is paid by the employer and what percentage of workers participate? On average, employers pay almost three quarters of the premium for individual coverage of salaried workers. The amount, on average, employers kick in for their hourly workers is 72.4%. The participation rates are also high, as might be expected with such high benefit contribution rates. For hourly full-time workers, close to 76% enroll in their employer's plan while slightly more salaried workers do, at 82.5%. These can be viewed as lower bounds for the percent of working individuals who have active employer sponsored health insurance as some workers could be covered by a family member's policy.

B. Individual Coverage: Area Development Districts

Information can also be gleaned at the ADD level. As indicated in Table 2, there are a variety of figures between the ADDs. For salaried workers, the percent of employees offered individual health insurance ranges from a low of 70.2% in the Gateway ADD, to a high of 92.4% in the KIPDA ADD, a spread of more than 22 percentage points. For salaried individuals, the top three ADDs are KIPDA, Northern Kentucky, and the Bluegrass, all of which contain, interestingly,

FIGURE 1   Area Development Districts

TABLE 2 — Individual Coverage: ADDs

	SALARIED			HOURLY		
ADD Name	% of Employees Offered Individual Health Insurance	% of Employees Offered Insurance Who Participate	Average % of Premiums Covered by Employer	% of Employees Offered Individual Health Insurance	% of Employees Offered Insurance Who Participate	Average % of Premiums Covered by Employer
Purchase	83.9%	84.1%	80.7%	81.3%	82.3%	78.6%
Pennyrile	86.6%	87.0%	79.9%	79.9%	76.8%	76.4%
Green River	86.9%	80.4%	67.0%	88.4%	73.6%	65.7%
Barren River	89.0%	86.5%	81.2%	84.2%	83.2%	78.9%
Lincoln Trail	86.4%	77.3%	76.4%	87.0%	68.8%	74.1%
KIPDA	92.4%	81.5%	70.2%	88.0%	74.1%	67.1%
Northern Kentucky	91.7%	80.6%	75.7%	88.5%	71.9%	75.1%
Buffalo Trace	83.8%	88.7%	72.9%	78.4%	84.2%	75.8%
Gateway	70.2%	71.2%	78.2%	80.5%	75.4%	70.9%
FIVCO	84.1%	90.3%	65.8%	85.2%	84.5%	60.3%
Big Sandy	80.3%	84.4%	77.3%	82.9%	78.4%	77.2%
Kentucky River	85.8%	83.9%	76.4%	85.5%	80.7%	74.9%
Cumberland Valley	85.3%	82.4%	76.5%	84.6%	78.0%	74.9%
Lake Cumberland	84.7%	87.6%	72.6%	82.2%	80.4%	71.0%
Bluegrass	90.5%	82.5%	78.3%	84.6%	77.1%	75.7%

TABLE 3 — Individual Coverage: Industry Groups

	SALARIED			HOURLY		
Industry	% of Employees Offered Individual Health Insurance	% of Employees Offered Insurance Who Participate	Average % of Premiums Covered by Employer	% of Employees Offered Individual Health Insurance	% of Employees Offered Insurance Who Participate	Average % of Premiums Covered by Employer
Agriculture, Forestry, Fishing	64.3%	71.3%	62.9%	57.6%	65.5%	69.6%
Mining	93.3%	94.8%	77.3%	92.7%	94.6%	81.5%
Construction	74.0%	76.6%	76.9%	81.9%	72.6%	75.5%
Durable Manufacturing	97.3%	92.4%	75.1%	96.8%	89.1%	74.3%
Nondurable Manufacturing	98.7%	94.1%	77.9%	97.8%	88.9%	77.4%
Transportation, Communications, Public Utilities	88.2%	85.6%	79.5%	87.3%	81.7%	79.7%
Wholesale Trade - Durables	91.4%	85.3%	81.9%	86.7%	85.7%	83.8%
Wholesale Trade - Nondurables	94.1%	83.3%	80.4%	83.0%	79.0%	83.0%
Retail Trade - Durables	75.2%	75.3%	71.1%	79.4%	62.0%	70.6%
General Merchandise & Food Retail	77.4%	79.7%	51.4%	85.3%	62.9%	48.9%
Automotive and Accessories Retail	84.0%	78.7%	68.8%	84.4%	71.6%	66.3%
Eating and Drinking Places	82.0%	55.0%	57.4%	65.3%	31.2%	40.0%
Finance, Insurance, Real Estate	88.8%	78.0%	79.7%	78.1%	71.7%	78.5%
Entertainment Related Services	80.3%	71.4%	65.4%	74.1%	50.4%	57.1%
Business Services	82.2%	70.7%	68.8%	75.9%	56.5%	61.4%
Professional Services	88.0%	81.3%	81.4%	70.2%	72.4%	77.5%
Personal and Health Services	89.2%	77.1%	72.7%	89.5%	70.3%	70.6%
Social & Community Organizations	95.2%	87.6%	70.4%	91.3%	84.1%	68.9%
Public Administration	92.1%	92.5%	90.6%	83.5%	89.0%	89.3%

a significant metropolitan area. This should not be over emphasized though. All but one ADD have health insurance offered to in excess of 80% of their workers. Later results also imply that metropolitan areas do not, in general, have higher levels of benefits.

Almost the same story can be told about full-time hourly workers. Interestingly though, five ADDs have a higher percentage of hourly workers offered individual health insurance than salaried workers. The most notable of these is Gateway, where hourly workers are offered health insurance at a rate about 10 percentage points higher. The ADD with the highest rate of employee offering is Northern Kentucky at 88.5%. A close second is Green River with 88.4%.

The level of participation differs greatly among the ADDs. The FIVCO ADD tops the list with a 90.3% participation rate for salaried workers and an 84.6% participation rate for hourly workers. This is in spite of having nearly the lowest percentage of health insurance offered. This same result does not carry through to the Gateway ADD whose offering rates are the lowest in the state alongside participation rates that are low relative to the rest of the state. Striking as well is the low rate for hourly workers in Lincoln Trail, 68.8%, while 87% are offered some form of coverage.

Potentially underlying participation is the level of cost that employers pick up. One would expect a much higher rate of participation, holding other factors constant, for an area where firms on average pick up more of the costs. Examining Table 2, it is seen that FIVCO and Green River ADDs have the lowest percent of health insurance costs covered by employers. FIVCO, however, as noted earlier, has the highest participation rates for both salaried and hourly workers. Green River, on the other hand, has two of the lowest participation rates. Barren River ADD enjoys the highest rate of employer contributions: on average 81.2% of premiums for salaried and 78.9% for hourly workers. As expected, its participation rates are high relative the other ADDs. These mixed results imply that there are significant factors affecting participation rates beyond just costs faced by the average employee.

C. Individual Coverage: Industry Groups

There is much more variation in the industry groupings than in the ADDs. This, too, is somewhat expected as the ADDs are normally composed of different industries. As can be seen in Table 3, the top industries are both Non-durable Goods and Durable Goods Manufacturing, with 98.7% and

97.3% of salaried workers being offered health insurance respectively. The rates are similar for hourly workers for these two groupings: 97.8% and 96.8%. Mineral industries also offer individual coverage to employees at a high rate. On the other end of the spectrum are Agriculture and Construction.

Looking at the level of employer contributions, the two industries that are immediately obvious are General Retail and Restaurants. Both for salaried and hourly full time workers, employer contributions cover a significantly lower percentage of costs than the other industries. Public Administration was found to have the highest level of premiums covered, 90.6% for salaried workers and 89.3% for hourly workers.

Participation is also quite varied with the highest levels of employee enrollment being found in the Mineral and Manufacturing industries, all with more than 92% participation of eligible salaried employees and 88.9% for hourly workers. The industry that has the lowest participation in individual health insurance benefits is Restaurants, with 55% of salaried and 31.2% of hourly workers. Interestingly, these low rates for the Restaurant group correspond to two of the lowest employer contribution rates. General Retail, though, with similar employer contributions has employee participation rates almost twice that of Restaurants for hourly workers and a full 24 percentage points for salaried workers.

III. DEPENDENT HEALTH INSURANCE COVERAGE

Being offered individual health insurance coverage is a substantial benefit. The next level of coverage is to have both individual as well as dependent coverage. This results in both the worker and his family or dependents being offered insurance. Dependent coverage is normally conditional on having individual coverage. Thus, the percent of workers offered dependent healthcare coverage is strictly less than that of individual coverage.

A. Dependent Health Insurance Coverage: The State

As a whole, 85.7% of salaried workers are offered dependent health insurance through their employer. The rate is a little lower for hourly workers at 81.8%. Thus, the vast majority of Kentucky workers have at least access to both individual and dependent coverage.

TABLE 4 — Dependent Coverage: ADDs

	SALARIED			HOURLY		
ADD Name	**% of Employees Offered Dependent Health Insurance**	**% of Employees Offered Insurance Who Participate**	**Average % of Premiums Covered by Employer**	**% of Employees Offered Dependent Health Insurance**	**% of Employees Offered Insurance Who Participate**	**Average % of Premiums Covered by Employer**
Purchase	81.2%	51.8%	40.4%	79.1%	45.7%	39.7%
Pennyrile	84.3%	59.4%	48.5%	76.2%	50.1%	44.8%
Green River	84.0%	51.4%	43.9%	84.1%	44.1%	41.6%
Barren River	87.1%	55.7%	43.0%	83.0%	50.1%	40.2%
Lincoln Trail	82.3%	53.9%	44.7%	81.0%	46.2%	40.4%
KIPDA	89.0%	48.1%	48.0%	83.8%	42.8%	45.9%
Northern Kentucky	88.8%	54.3%	54.0%	84.5%	49.5%	51.9%
Buffalo Trace	81.8%	59.6%	57.3%	78.4%	56.6%	55.3%
Gateway	67.2%	57.7%	23.9%	76.1%	32.6%	21.0%
FIVCO	83.0%	46.6%	30.3%	83.6%	45.5%	24.9%
Big Sandy	77.0%	63.0%	52.3%	82.2%	51.6%	42.4%
Kentucky River	84.0%	47.9%	37.0%	85.1%	42.2%	29.5%
Cumberland Valley	79.9%	56.6%	46.8%	78.6%	54.3%	42.0%
Lake Cumberland	80.3%	44.3%	23.8%	76.7%	36.9%	21.6%
Bluegrass	86.9%	51.8%	47.3%	80.5%	46.6%	44.3%

The level of employer contributions is sharply lower than for individual coverage. As a whole, employers pick up on average 42.8% of the cost for hourly workers and 45.7% for salaried workers. These represent almost half the amount firms cover for individual coverage.

Participation in dependent care coverage is also substantially lower than that of individual coverage. As a whole, salaried workers participate in their employer offered plans 51.8% of the time and hourly workers 45.9% of the time. While these are much lower than than the participation rates for individual coverage, these rates should be qualified. The survey asked employers what percent of all employees participate in their dependent coverage package. The question was not asked about employees whom had dependents. Thus, as one example, a single individual who would not participate in the dependent plan is included in the over all participation rate. So, the reported participation rate is lower than it is for the target population of employees with dependents, an unavailable number.

B. Dependent Health Insurance Coverage: Area Development Districts

There is modest variation in the percent of employees that are offered dependent care insurance between the ADDs. As can be seen in Table 4, most of the statistics fall into the lower 80's and high 70's for both salaried and hourly workers. Of note are KIPDA and Northern Ketucky ADDs, both having roughly 89% of salaried workers offered coverage. Also noteworthy, Kentucky River ADD hourly workers are offered dependent coverage 85.1% of the time. A seeming outlier is found in Gateway ADD with only 67.2% of salaried workers offered dependent coverage, far below the state figure of 85.7%.

Participation shows a little more spread with a high of 63% for salaried workers and 56.6% for hourly workers and lows of 44.3% and 32.6% respectively. Interestingly, the ADD's behind these number have the respective highest and lowest levels of employer contributions.

The numbers become more varied when employer contributions are examined. For salaried workers, the high is found in Buffalo Trace, at 57.3%, while the low comes from Lake Cumberland ADD at 23.8%. Gateway, FIVCO, and Kentucky River ADDs are also low at 23.9%, 30.3%, and 37% respectively. As would be expected, the participation rates of these ADDs are also near the bottom, except for the Gateway ADD who records almost 58% of salaried workers enrolling in dependent coverage. This is the same event found in individual coverage for Gateway: low benefit offering percentage, low employer contribution rate but very high enrollment rate relative to the rest of the state.

TABLE 5   **Dependent Coverage: Industry Groups**

Industry	SALARIED			HOURLY		
	% of Employees Offered Dependent Health Insurance	% of Employees Offered Insurance Who Participate	Average % of Premiums Covered by Employer	% of Employees Offered Dependent Health Insurance	% of Employees Offered Insurance Who Participate	Average % of Premiums Covered by Employer
Agriculture, Forestry, Fishing	62.1%	43.2%	26.0%	52.3%	33.3%	19.0%
Mining	86.4%	89.8%	80.0%	92.7%	91.2%	74.2%
Construction	70.7%	49.9%	40.3%	80.3%	40.2%	35.8%
Durable Manufacturing	96.3%	73.7%	65.3%	95.2%	69.9%	64.9%
Nondurable Manufacturing	96.6%	76.3%	69.6%	95.7%	67.9%	68.4%
Transportation, Communications, Public Utilities	87.5%	62.4%	60.7%	85.0%	61.9%	57.3%
Wholesale Trade - Durables	89.9%	53.4%	47.8%	84.5%	53.0%	49.1%
Wholesale Trade - Nondurables	90.3%	59.5%	56.5%	79.6%	48.9%	56.4%
Retail Trade - Durables	69.7%	37.1%	37.9%	71.3%	25.8%	28.7%
General Merchandise & Food Retail	74.7%	61.6%	45.2%	82.0%	45.6%	42.8%
Automotive and Accessories Retail	82.1%	39.3%	32.0%	81.2%	31.6%	26.6%
Eating and Drinking Places	73.4%	39.3%	43.8%	54.5%	16.3%	31.5%
Finance, Insurance, Real Estate	85.1%	49.0%	47.0%	75.1%	44.0%	48.0%
Entertainment Related Services	79.0%	34.8%	32.5%	72.7%	23.9%	31.9%
Business Services	73.9%	38.2%	41.0%	66.1%	31.5%	31.7%
Professional Services	85.9%	48.4%	34.6%	66.2%	33.3%	26.1%
Personal and Health Services	87.1%	47.3%	47.2%	86.6%	43.7%	43.2%
Social & Community Organizations	91.8%	35.7%	21.8%	87.6%	33.8%	20.0%
Public Administration	87.7%	55.4%	42.5%	77.9%	53.4%	42.8%

For hourly workers, the same variance is true for the percent of costs that employers pick up. Buffalo Trace is characterized by the most generous employer contributions. The bottom, less than half of the top, is found in the Gateway ADD, closely followed by the Lake Cumberland and FIVCO ADDs. All three of these have hourly workers' employers covering less than 25% of the cost of dependent coverage. The Gateway ADD, unlike for individual coverage and salaried dependent coverage, records a low level of participation for the hourly workers, 32.6% along with its low level of contributions.

C. Dependent Health Insurance Coverage: Industry Groups

As with individual coverage, the variance of the results increase when the examination is turned to industry groups. Table 5 provides a summary of these numbers. The manufacturing industries again prove to offer the highest percent of their employees this benefit: over 96% of salaried and over 95% for hourly. Agriculture is found at the bottom, offering only about 62% salaried workers and 52% of hourly workers the benefit of dependent health insurance.

The percent employers contribute provides some interesting results. The industry Social and Community Organizations, while having one of the highest percentages of employees offered the dependent health coverage, is found at the bottom in terms of percent of premiums covered by employer contributions: 21.8% and 20% for salaried and hourly workers, respectively. This also corresponds to some of the lowest participation rates, in the lower 30%'s for both salaried and hourly. The industry in which employers cover the highest percentage of costs is Minerals, with both manufacturing groups following. As would be expected, these industries also have a very high rate of participation, about 90% for both groups of workers for Minerals.

IV RETIREE HEALTH INSURANCE COVERAGE

The last portion of the health insurance benefit spectrum examined is retiree health insurance. This, as with dependent insurance coverage, is a benefit normally conditional on having individual coverage as a worker. In the current examination, the survey directly asks about the participation of current

TABLE 6   Retiree Coverage: ADDs

	SALARIED			HOURLY		
ADD Name	% of Employees Offered Retiree Health Insurance	% of Employees Offered Insurance Who Participate	Average % of Premiums Covered by Employer	% of Employees Offered Retiree Health Insurance	% of Employees Offered Insurance Who Participate	Average % of Premiums Covered by Employer
Purchase	38.3%	53.0%	27.3%	37.8%	53.2%	32.2%
Pennyrile	43.5%	26.5%	22.1%	37.5%	26.7%	21.2%
Green River	38.2%	47.2%	28.8%	35.8%	38.9%	30.2%
Barren River	37.6%	37.6%	25.6%	36.4%	37.6%	24.6%
Lincoln Trail	42.2%	32.8%	28.0%	43.0%	37.2%	31.1%
KIPDA	41.3%	27.7%	25.3%	39.2%	26.3%	23.3%
Northern Kentucky	38.7%	27.1%	39.0%	35.3%	26.3%	42.0%
Buffalo Trace	52.6%	67.4%	44.3%	48.6%	66.7%	29.7%
Gateway	44.1%	40.4%	33.1%	44.2%	36.9%	28.0%
FIVCO	53.0%	52.7%	38.1%	50.7%	49.2%	33.4%
Big Sandy	44.6%	44.6%	32.9%	47.9%	59.7%	31.8%
Kentucky River	22.8%	44.0%	35.3%	22.1%	32.6%	32.3%
Cumberland Valley	34.9%	51.9%	46.9%	34.3%	43.3%	32.6%
Lake Cumberland	34.4%	42.3%	32.0%	31.2%	46.9%	26.0%
Bluegrass	35.6%	48.5%	39.1%	30.2%	47.6%	34.5%

retirees, so the numbers are more focused than that of dependent coverage. However, there is no distinction made between individual retiree insurance only and individual and dependent retiree insurance. Both are lumped together. In addition, retiree insurance can have an interaction with the Medicare system, as many retirees are guaranteed a minimum level of health benefits from the federal government based on age. This interaction is not addressed.

A. Retiree Health Insurance Coverage: The State

The percent of employees offered retiree health insurance is lower than that of either of the other two types of coverage. In total, about 39.2% of salaried workers have this benefit offered as do 36.6% of hourly workers. Still, these are not negligible numbers and translate into more than 1/3 of all workers in Kentucky, on average, having access to some form of retiree health insurance, roughly half of the amount that qualify while active employees.

The level of participation is also notably lower. About 37% of former hourly workers and 38% of salaried participate in their respective plans. Also, the level of cost is much higher for the former employee for the coverage. For formerly hourly workers, employers on average cover 29.7% of the

premiums while slightly more, 31.7%, for former salaried workers. Thus, this type of coverage is much more expensive from the retiree's perspective.

B. Retiree Health Insurance Coverage: Area Development Districts

Between ADD's there are distinct differences. Being offered retiree health insurance, as can be seen from Table 6, ranges from a high of 52.6% to a low of 22.8% for former salaried workers and 48.6% to 22.1% for former hourly workers. The ADDs with the two highest offering percents for both groups are the FIVCO and Buffalo Trace. The Kentucky River ADD has the lowest level with less than 23% of employees being offered any type of retiree insurance.

Buffalo Trace, in addition to having one of the highest proportions of retirees offered insurance, also has the greatest proportion of retirees participating, almost two thirds for each group. This is far above other ADDs. Also of note is the Purchase ADD, with a high 53% of retirees participating in employer sponsored retiree health plans with employers covering only about 27% and 32% of premiums for salaried and hourly former workers, respectively. The Pennyrile ADD presents the opposite picture. For the two categories of retirees, it has about 27% participation for both and roughly 22% premium coverage. The KIPDA ADD also presents this same

TABLE 7 — Retiree Coverage: Industry Groups

Industry	SALARIED			HOURLY		
	% of Employees Offered Retiree Health Insurance	% of Employees Offered Insurance Who Participate	Average % of Premiums Covered by Employer	% of Employees Offered Retiree Health Insurance	% of Employees Offered Insurance Who Participate	Average % of Premiums Covered by Employer
Agriculture, Forestry, Fishing	10.2%	0.0%	0%*	7.4%	0%*	0%*
Mining	39.8%	50.1%	24.0%	40.6%	50.0%	24.0%
Construction	21.8%	9.3%	6.6%	23.4%	8.8%	3.5%
Durable Manufacturing	47.7%	44.7%	36.7%	45.1%	42.2%	34.0%
Nondurable Manufacturing	47.5%	57.1%	45.7%	46.3%	51.8%	42.0%
Transportation, Communications, Public Utilities	38.4%	46.7%	33.5%	39.9%	43.2%	35.8%
Wholesale Trade - Durables	33.7%	25.2%	16.5%	31.1%	20.6%	14.8%
Wholesale Trade - Nondurables	33.2%	35.0%	20.6%	29.1%	52.8%	34.4%
Retail Trade - Durables	19.5%	4.8%	15.9%	14.7%	4.9%	9.3%
General Merchandise & Food Retail	40.3%	23.7%	8.5%	36.0%	13.5%	1.2%
Automotive and Accessories Retail	18.3%	6.5%	0.0%	19.9%	8.9%	0%*
Eating and Drinking Places	20.5%	12.4%	12.7%	14.3%	0%*	0%*
Finance, Insurance, Real Estate	26.1%	27.5%	10.5%	23.9%	28.8%	11.0%
Entertainment Related Services	33.3%	44.1%	44.8%	26.5%	49.3%	49.0%
Business Services	21.8%	7.0%	4.1%	22.3%	5.9%	3.3%
Professional Services	26.5%	2.3%	13.7%	18.2%	0.1%	9.2%
Personal and Health Services	23.2%	8.1%	21.4%	22.8%	6.8%	21.5%
Social & Community Organizations	60.4%	67.8%	47.1%	59.1%	66.1%	45.3%
Public Administration	64.7%	66.2%	52.6%	55.8%	66.7%	45.5%

*Note: Having a 0% value recorded does not mean there are no workers with this benefit. It does mean that of the firms sampled, all reported having no employees having such benefits. In total, it can be reasonably assumed that the true percent of employees is very close to 0%.

low participation and low premium coverage. Northern Kentucky presents a mixture of the two: low participation, about 27% for each, and high levels of premium coverage. The Bluegrass ADD demonstrates the polar end with fairly high premium contribution rates and high participation.

C. Retiree Health Insurance Coverage: Industry Groups

The results of the survey on retiree health insurance by industry can be found in Table 7. They exhibit a wide range between top and bottom. This continues the general finding of increased variability between industries relative to ADDs. The highest level of offering is found in Public Administration and Social and Community Organizations for both salaried and hourly workers. Agriculture, Retail Trade, Automotive and Accessories Retail, and Restaurants all offer salaried and hourly workers retiree health insurance less than 20% of the time.

The two manufacturing groups as well as the Mineral Industry all offer high rates, relative to other industries, but still are at levels far below both individual and dependent coverage.

The range in percent of costs covered by employers is also wide, with a bottom of 0% for two industries, Agriculture and Automotive and Accessories Retail, to more than half of the cost covered in Public Administration for salaried workers. The Restaurant group also records 0% employer contributions for hourly workers. Something that should be pointed out is that while the data records 0% in the above industry categories, this does not mean that there are no employees in these industries being offered such benefits. There were just no employees offered benefits among the firms that were sampled. This result, however, does indicate that over all, the rate is very low and probably close to 0%. Construction records less than 6% of costs being covered by employers. As might be expected, none of the workers in Agriculture

participate in the employer's retiree health plan and less than 10% for Construction and Automotive and Accessories Retail. In fact, a number of industry groups have less than 10% participation. At the same time, more than two thirds of the retirees of the Public Administration and Social and Community Organizations industries participate.

V. CONCLUSIONS

This article has provided a brief survey of three different types of health insurance benefits in the state of Kentucky. The vast majority of Kentucky workers are being offered individual health insurance coverage (88.9% of salaried and 85.6% of hourly workers) and more than three quarters of each group enroll. While this is the case for the entire state as a whole, there are some differences at the ADD level. Such differences are more pronounced when industries are examined. In fact, a portion of the differences found in the respective ADDs are certainly attributable to their different industry make-ups.

For dependent health insurance the results are similar to that of individual coverage, as far as the percentage of employees being offered the benefit. The percent of costs covered by employers, though, is significantly lower as was the participation rate. The variability increased with ADDs and much more so when looking across industries.

Retiree insurance was the least common of the three benefits. In addition, a smaller proportion of employees participated and a smaller portion of costs were covered by employers. While Kentucky, as a whole, has roughly 39.2% and 36.6% of employees offered retiree health insurance, some industries offer no such benefit or contribution at all. In fact, 5 of the 19 industry groups offered retiree health insurance to less than 10% of their employees. Two industry groups offered more than two thirds of their employees the benefit.

In all, the health insurance benefits landscape in Kentucky is varied in both geography and industries. While not available in the current data, seeing how these benefits change, and have changed through time, would be an important next step in understanding Kentucky's health insurance benefits. This paper offers a snapshot of the world in 2002 and demonstrates the differences that already exist throughout Kentucky.

E-Commerce and Online Sales at Kentucky Businesses

Jonathan Roenker

The U.S. Census Bureau's estimates of e-commerce sales reached $10.2 billion in the second quarter of 2002; a 24.2% increase over the second quarter of 2001; proof that e-commerce sales are still burgeoning despite the relatively slow economy. This article provides state-level data concerning electronic commerce for Kentucky from a recent survey conducted by the University of Kentucky Center for Business and Economic Research. Survey results indicate that while the percentage of large businesses in the state using the Internet to conduct online sales continued to grow, albeit at a significantly slower pace, the percentage of small business conducting online sales actually shrank over the previous year. Based on the results of the survey, 26.5% of large Kentucky businesses and 11.2% of small Kentucky businesses are involved in e-commerce. The characteristics of Kentucky firms currently selling online are considered as is these firms' experiences with e-commerce. Finally, the effects of online sales on revenues and profits of Kentucky firms are addressed.

Introduction

Since the issue of the last Kentucky Annual Economic Report, a continued slide in the NASDAQ signals a still weakening technology sector. As of November of 2002, the year-to-date loss of the NASDAQ approached 35% of its value. Despite the difficult times befallen the technology sector, "e-commerce" sales continue to grow. The U.S. Census Bureau's estimates of e-commerce sales reached $10.3 billion in the second quarter of 2002; a 24.2% increase over the second quarter of 2001. During this same time period, total retail sales grew by only 2.5%[1]. While both of these figures are lower than the previous years' revised growth levels (29.9% and 4.3%, respectively), they demonstrate that e-commerce sales are still burgeoning despite the relatively slow economy.

While the magnitude of percentage growth in e-commerce is impressive, for the purpose of this article, only direction is of consequence. Given the consistent yearly increases in the amount of e-commerce conducted in the economy, it's logical to assume that these increases will continue in the near future. With approximately 149 million current internet users, of which over 100 million are considered to be regular, active users, internet commerce remains poised to continue its assault on sales at existing "brick and mortar" institutions[2]. Does this national trend hold true for Kentucky?

Description of Data

Now in its fifth year of circulation, the 2002 Business Confidence survey, conducted by the University of Kentucky Center for Business and Economic Research, provides the data for this article. In each of the five years that the survey has been conducted, firms were asked a series of questions concerning their use of the internet in conducting the daily business of their firm.

Again this year, the survey was distributed to two separate samples of Kentucky businesses: one containing 2,000 firms of all sizes, and the second containing 1,000 firms with at least 100 employees. As with all mail surveys a number of surveys were returned as undeliverable. Seventy surveys were returned as undeliverable from the large business sample, and 211 were returned from the all business sample. Completed surveys were received from 145 firms in the all business sample and 102 from firms in the large business sample. Examination of the two samples reveals that the characteristics of the businesses completing surveys are very similar to the characteristics of businesses in the entire sample[3]. As in past years, the all business sample is largely

composed of small businesses with less than 100 employees. The completed surveys in the all business sample contained approximately 6% large businesses. Since excluding these firms from the sample reduces the sample size only marginally, they are excluded and the all business sample will therefore be referred to as the small business sample.

Online Sales at Kentucky Businesses

For the fifth year in a row, the number of large businesses in the state offering their products over the Internet has increased. However, the rate of growth in the number of large firms using the Internet for sales was considerably smaller during the past year than in previous years as can be seen in Table 1.

While use of the Internet appears to be growing among large firms, survey results reveal that the number of small firms (50 or fewer employees) using the internet to sell their goods is shrinking, down to 11.2% from a high of 13.3% in 2001. National estimates place the number of small businesses currently selling online at approximately 12%-13%[4]. The sluggish economy of the past year appears to have taken its toll on both large and small firms in relation to e-commerce. Absent are the large growth rates in the number of firms turning to the Internet to increase the availability and access to their product in an ever more competitive marketplace.

It is not surprising, given the expense and difficulties associated with conducting online sales, that small firms have not embraced this method of selling during trying economic times. The cost, both monetary and non-monetary, of conducting online sales as a portion of total costs is most likely considerably lower for large businesses. As a result, online sales are less likely to be abandoned in a sluggish economy. Assuming a return to the booming economy of the late 1990's and early 2000's,

resumption in the growth of the number of firms using the Internet to conduct online sales could be possible.

Characteristics of Kentucky's E-Commerce Firms

Although their participation rates in e-commerce are quite different, the profiles of both small and large firms selling their goods and services on the Internet are quite similar. Large firms reported having sold their products online for approximately 2.8 years on average. This figure was only slightly smaller for small Kentucky businesses at 2.2 years. In the 2001 survey, nearly 40% of firms reported initiating e-commerce within the past year. The results from the 2002 survey reflect a slight shift in this figure with the percentage of firms initiating e-commerce in the past year down to approximately 32%. While firms in the state still appear to be expanding into e-commerce, the sluggish economy has substantially dampened the rate at which firms are establishing Internet operations. Those firms that have been selling online for longer than one year report an average of 3.3 years in e-commerce experience.

Previous years of data from the Kentucky Business Confidence survey have revealed that large businesses in the state tended to have a higher incidence of selling their online product to other businesses. While this is still true, the gap in the percentage of large and small firms selling to other businesses has narrowed substantially. Figure 1 also indicates that small businesses in the state are more often selling their product or service to government agencies. The number of small and large firms selling their online product or service to individual consumers is nearly identical.

The increased sales/revenue for the different sized firms appears to come from different types of online customers. For large businesses, approximately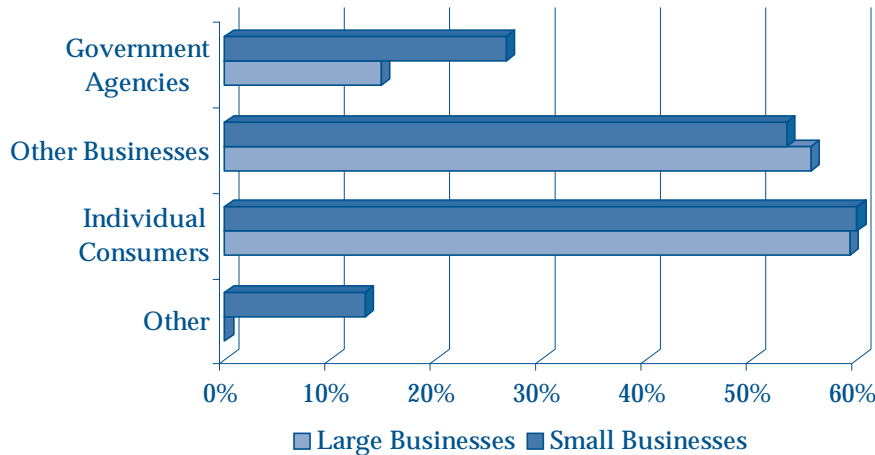 54% of their online customers are previous offline customers of the business, as compared to only 20% for small businesses. Small businesses, conversely, indicate that 60% of their online customers are new customers to their business, as opposed to only 27% for large businesses. The Internet appears to be a strong tool for small Kentucky businesses, allowing

TABLE 1

Percentage of Business that Sell Their Products Directly on the Internet

	1998	1999	2000	2001	2002
Large Businesses	10.1%	14.7%	15.1%	25.2%	26.5%
Small Businesses	--	--	9.8%	13.3%	11.2%

Source: Author's Calculations from the 2002 Business Confidence Survey

Figure 1
Customers of Kentucky Businesses Selling Online

them to reach customers that might not have been previously aware of or able to purchase their product or service. For large businesses in the state, e-commerce seems to serve primarily as a convenient way for existing clients of the business to place orders.

Revenues and E-Commerce

In addition to determining the end user of the goods and services that Kentucky firms sell online, the survey sought to determine the effect online sales have had on the firms' sales/ revenue. The results of the 2002 survey indicate that a larger portion of the Kentucky firms selling online in the past year experienced increased sales/revenue over previous survey years. Figure 2 shows that 50% of large firms and 53% of small firms reported that Internet sales increased their sales/revenue either somewhat or significantly in the past year. Although firms are implementing Internet sales at a reduced rate over previous years, those firms using the Internet to conduct sales are generally reporting increased sales/revenue, perhaps helping to buoy their firm from the sluggish economy.

Why are Kentucky Businesses Not Currently Selling Online

While the general time trend in Kentucky is one of an increasing number of firms selling online, the majority of businesses still do not sell their product or service over the Internet. The 2002 Business Confidence Survey asked participants to indicate why it is that they have chosen not to sell their product online. Table 2 indicates that the overwhelming majority of those businesses not selling online choose not to do so due to the incompatibility of the format with their product or service. The majority of both small and large businesses indicate that they do not sell their product online because it is difficult to do so. 94.4% of large

Figure 2
Revenue Changes since the Initiation of E-Commerce
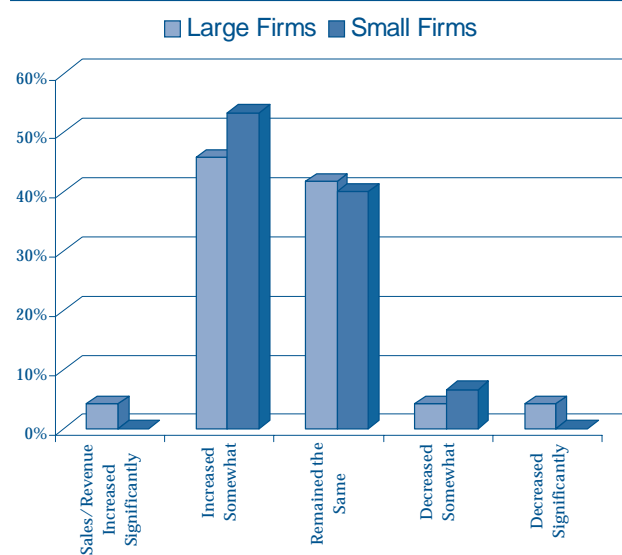
Source: Author's Calculations from the 2002 Business Confidence Survey

firms report that it is difficult to offer their product over the Internet, while 87.0% of small firms make the same claim. These figures are up significantly over last year's figures of 84.2% and 77.5%, respectively.

Table 2
Why Firms Don't Currently Sell Online

	Large Firms	Small Firms
Not sure how to initiate	3.7%	3.0%
Difficult to conduct for my goods/services	94.4%	87.0%
Requires too much money/investment	1.9%	5.0%
Concerns over security issues	0.0%	5.0%

Further investigation reveals that of those small businesses not currently using the Internet as a means to sell their product; over 63% respond that they have no future plans to incorporate the Internet into their businesses. Large businesses are slightly less reluctant to rule out the use of the Internet to sell their product in the future, although nearly 46% of those firms responded that they have no future plans to use the Internet for sales. These figures appear to indicate some sort of saturation in terms of the number of Kentucky firms that are incorporating the Internet into their businesses for online sales.

Coupled with the small increase in the number of large firms (and the decrease in the number of small firms) who utilized online sales for their business in the past year as well as an increase in the percentage of firms who claim that online sales are hard to conduct for their good or service, it appears that for those firms whom initiating online sales is most advantageous have already done so. The initial rush of firms to join the e-commerce age seems to have, at least, temporarily subsided. In addition, in the previous section, it was noted that while businesses continue to report that online sales helped to boost their profits and sales, very few of the firms in the sample report that online sales have a significant impact on their sales and revenue, either positively or negatively. These individual pieces of information may collectively point towards the idea that online sales do not directly translate into instant profit. As a result, Kentucky firms may no longer be in a rush to incorporate this technology into their business. Together with a sluggish economy, these notions help to explain the decline in the rate at which Kentucky firms are using the Internet for sales.

Conclusion

While the percentage of large businesses in the state using the Internet to conduct online sales continued to grow, albeit at a significantly slower pace, the percentage of small business conducting online sales actually shrank over the previous year. Based on the results of the survey, 26.5% of large Kentucky businesses and 11.2% of small Kentucky businesses are involved in e-commerce. As in previous years, the majority of online sales are to new customers with 60.0% of small business sales and 27.0% of large business sales going to new customers.

The overwhelming majority of businesses not currently using the Internet for online sales indicated they did not use it due to the incompatibility of their product being sold in this manner. In addition, a significant portion of these firms indicated that they had no plan to use the Internet in the future for the purpose of online sales. Given the new information provided by the survey results, it appears that the state has possibly reached, at least temporarily, some sort of saturation point in terms of the number of firms for whom online sales is a good business decision.

Endnotes

1. U.S. Department of Commerce, http://www.census.gov/mrts/www/current.html
2. The *Computer Industry Almanac,* http://www.c-i-a.com and the *Nielson/Net Ratings, http://www.nielsen-netratings.com*
3. For more information, see the "Survey Methodology" section of the 2001 *Business Confidence Survey, Kentucky Business and Economic Outlook: Volume 5, Number 1.*
4. Reported on the "NUA Internet Surveys" website. No comparable data was available for large businesses.

Manufacturing Employment: How Has Kentucky Performed During the Recent Recession?

Eric Thompson and Mark Schweitzer

There has been a substantial decline in manufacturing employment in the State of Kentucky over the past two years. In particular, manufacturing employment in Kentucky declined by 6.2% in 2001. Such a decline is not unprecedented during a recession period, but is a large enough to merit further examination, particularly since recessions are a crucial period for industrial reallocation, and recession-period trends may persist beyond the recession. The principal finding was that the decline in Kentucky manufacturing during the recent recession, while it was large, was less than the national decline. There were three additional findings of note: 1) the relative performance of Kentucky manufacturing was not as strong as it was during the recession of the early 1990s; 2) Kentucky did not substantially outperform northern states, which have been an important source of relocating manufacturing plants for Kentucky; and 3) the job losses in the non-durable goods manufacturing industry were more severe in Kentucky than nationally.

Introduction

There has been a substantial decline in manufacturing employment in the State of Kentucky over the past two years. In particular, manufacturing employment in Kentucky declined by 6.2% in 2001.[1] Such a large drop in employment at first glance would raise concerns about the future of manufacturing in Kentucky. However, given that the decline occurred during a period of recession nationally, a 6 percent decline in manufacturing employment may not differ substantially from the national pattern.

Nationally manufacturing employment has been declining for the last several years because of productivity gains in manufacturers that have outpaced the overall economy. Recessions add two additional factors contributing to employment declines in manufacturing: 1) weak aggregate demand for products in a recession will dampen manufacturing production and employment; and 2) recessions are associated with unusually high levels of resource reallocation (Davis, Haltiwanger, and Shuh, 1996). It is this second feature which makes recessions an important time to observe trends in employment, because these trends are more evident then and may not be reversed when the recession is over.

This study seeks to examine this recent decline in Kentucky manufacturing employment by placing it in the context of earlier recessions, as well as recession-period job declines elsewhere in the south, the midwest and northeast regions, and the United States overall. Comparisons with these northern regions are of particular interest since manufacturing job growth in Kentucky has been aided in recent years by the reallocation of manufacturing activity from north to south. That process, for example, has included the continued expansion of automobile and automobile parts manufacturing throughout the Southern U.S. (Weiler, Thompson, and Ozama, 2002). The relative performance of Kentucky during the recent recession may yield clues to the future of manufacturing in the state.

Later sections of this study will examine manufacturing job losses in past recessions and the relative performance of the manufacturing industry in Kentucky and the rest of the south. Manufacturing losses during the recent recession also will be examined for Kentucky metropolitan areas. But first, the role of recessions in the long-term performance of the manufacturing industry is discussed in more detail.

The Long History of Shrinking Manufacturing

Manufacturing has been declining as a share of United States employment since 1947, when manufacturers employed 35% of the US workforce. Figure 1 shows this long run decline in manufacturing as a share of total employment, and also illustrates recessions, as identified by the NBER business cycle dating committee. The shaded bars in Figure 1 indicate recession periods. A tendency for

FIGURE 1

Manufacturing's Share of U.S. Employment
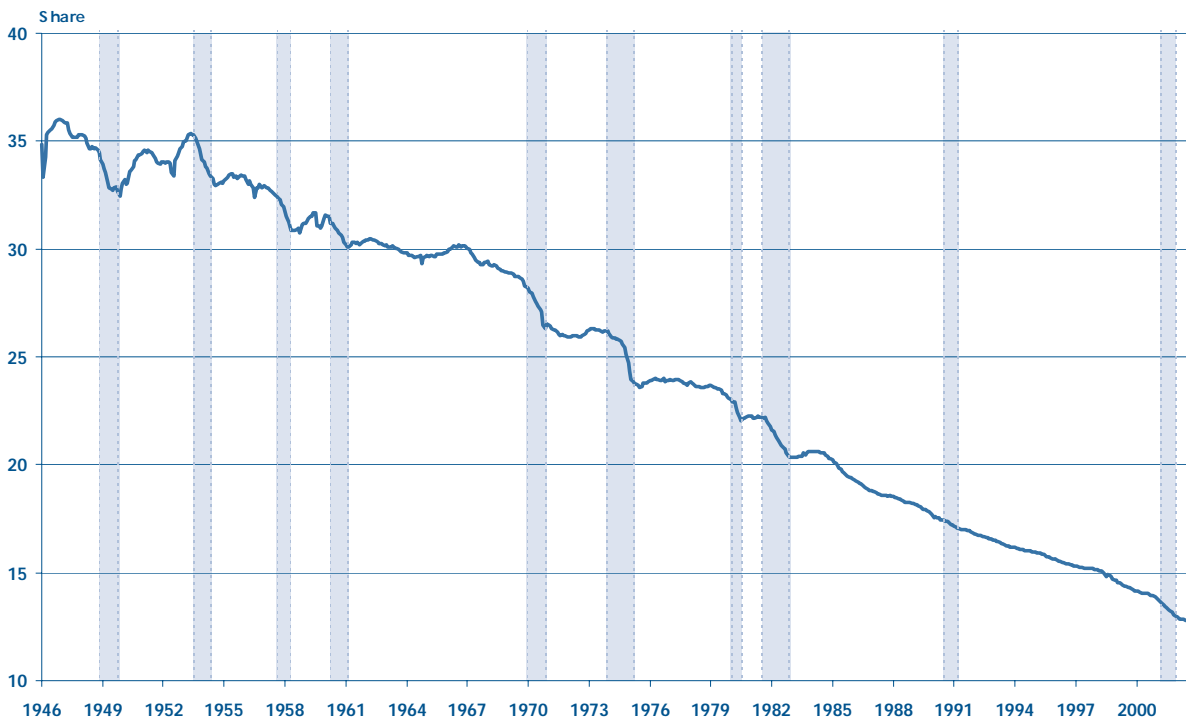
manufacturing's employment share to decline more sharply in recessions is evident in this figure. Despite this decline in employment shares, manufacturing's share of US output has been relatively stable at about 16 to 17% of Gross Domestic Product.[2] These divergent trends are the product of relatively rapid labor productivity growth: meaning that for each worker more and more output is produced every year.

This is important to keep in mind because the 1990s trend levels of productivity gains, which appear to be continuing, would lower manufacturing's share of total employment even without a recession. For example, even if robust 2000 rates of GDP growth (3.8 %) were maintained, the 1990s average rate of manufacturing productivity growth (3.7%) would still imply declines in manufacturing's employment share of 0.25% a year, even while manufacturing maintained it's share of total output. Recessions tend to intensify these losses as overall output contracts and manufacturer's share of that output temporarily dips.

This still does not fully describe the impact that recessions have on manufacturers and their employees. Davis, Haltiwanger and Shuh (1996) show in their book *Job Creation and Job Destruction* that recessions are periods in which an unusually large amount of reallocation occurs. This reallocation

is partially hidden in net employment change figures, because while many employers layoff workers others are hiring workers, even in the deepest recessions. For example in 1982, the recession resulted in a 7.7% decline in manufacturing jobs nationally. This net decline resulted when 14.5% of manufacturing jobs were eliminated while other plants boosted their employment 6.8%. The substantial rates of reallocation continued for several years.

Davis, Haltiwanger and Shuh also find that job destruction and creation are very persistent meaning that plant-level employment patterns set in a recession are likely to remain for years to follow. These reallocations are not limited to inter-industry moves within manufacturing, but can also be between plants in different regions of the country. When manufacturers are faced with difficult times, they may switch their production to more efficient or cheaper locations. This raises the important possibility that recessions will reveal important regional employment shifts.

Study Region

The changing fortunes of the manufacturing industry within the United States over the last few

FIGURE 2

North and South Components of the Study Region
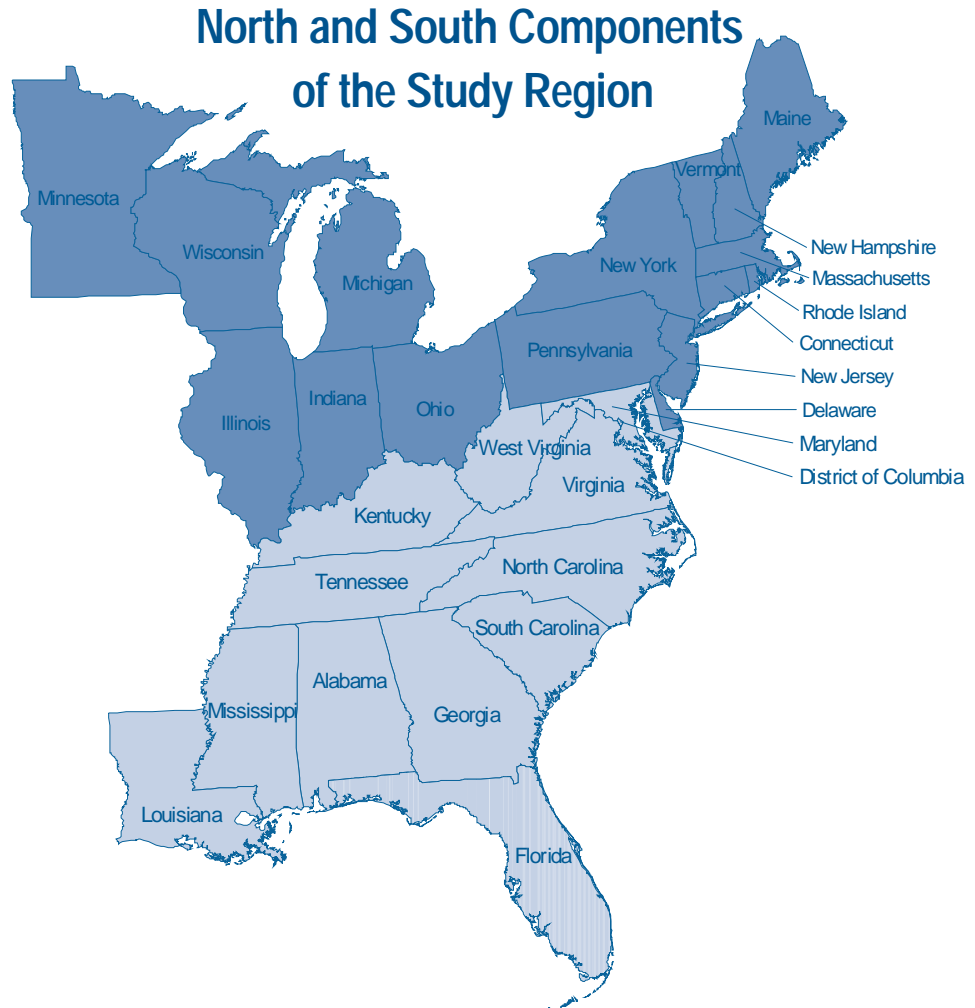
decades have been felt most acutely in the employment declines in the northeast, Midwest and mid-Atlantic states, and steady employment or even increases in the mid-south and southeast. While there has been growth in portions of the western United States, the most fundamental changes have been felt in the eastern half of the United States in declining areas including states such as Pennsylvania, New York, Ohio, Indiana, and Illinois, or growing areas in the south such as Kentucky, Tennessee, Virginia, South Carolina, Georgia, Florida, Alabama, and Mississippi.

In addition to focusing on growth in Kentucky, this study will focus on relative growth in the North and South regions in the eastern half of the United States. Analysis includes all states that are located at least in part to the east of the Mississippi River. Under this definition, Minnesota and Louisiana are considered East of the Mississippi River because the river bisects the states, but Iowa, Missouri, and Arkansas are not included since the Mississippi River forms the eastern border of these states.

States located in the South Census region are grouped with the South region while states located in the Northeast and Midwest Census regions are grouped in the North region. The states included in each region are illustrated in Figure 2.

Previous Recessions

The last few decades have been characterized by the relative expansion of the manufacturing industry in the southern United States, but slow growth in the northern regions. The north also has experienced substantial employment declines over these decades.

The performance of the manufacturing industry in these regions also diverged during recessions in the 1980s and 1990s. Table 1 below shows the change in manufacturing employment by region during the "double-dip" recession of the early 1980s and the recession of the early 1990s. In Table 1, the recession periods were approximated using annual data since monthly manufacturing employment data by state

were not available for these historic periods. The approach was to compare the change in employment between the year before the recession began and the year in which the recession ended. The peak of the business cycle before the recession of the early 1980s was January 1980, while the trough of the second business cycle was November 1982 (National Bureau of Economic Research, 2002). The peak of the business cycle before the recession of the early 1990s was July 1990 while the trough was March 1991 (National Bureau of Economic Research, 2002).

Manufacturing employment declined throughout the country in both recessions. In the region East of the Mississippi the decline was substantially greater in North region than in the South region, usually about twice as great. The performance of Kentucky was uneven in the two recessions. In the recession of the early 1980s, manufacturing job losses resembled those in the North region. In the recession of the early 1990s, manufacturing job losses in Kentucky reflected trends in the South region. In fact, declines in Kentucky were even less

in the regional economy.

For the United States overall, declines from 1979 to 1982 accounted for most of the total decline during the 1975 to 1985 period. For the recession of the early 1990s, declines during the two-year period from 1989 to 1991 accounted for about one-third of the overall decline from 1985 to 1995. Similar statements can be made for the North and South regions East of the Mississippi.

Note also that the severity of the decline during the recession period was an indicator of the performance for the longer 10-year period. For example, the North region and the United States overall experienced a roughly 3% decline in manufacturing's share of total employment from 1979 to 1982 out of a 10-year decline from 1975 to 1985 of roughly 4%. In the South region, the decline was 1.7% during the 1979 to 1982 recession period and the overall decline from 1975 to 1985 was just 2.2%. Though less striking, this pattern is also evident based on data from 1985 to 1995 and the 1989 to 1991 period demarking the recession of the early 1990s. These

TABLE 1

**Relative Manufacturing Employment Change
During the Previous 2 Recessions
North versus South Region (East of the Mississippi),
United States and Kentucky**

		Percent Change in Manufacturing Employment			
			States East of the Mississippi		
Recession	Period*	United States	North	South	Kentucky
Early 1980s	1979-1982	-10.40%	-14.50%	-7.50%	-16.50%
Early 1990s	1989-1991	-4.80%	-7.10%	-3.70%	-0.90%

Source: Regional Economic Information System, Bureau of Economic Analysis.
* Based on business cycle dating by the National Bureau of Economic Research (2002).

than those for the South overall.

The recession period declines also were a crucial part of the overall declines in manufacturing in these regions over time. Table 2 lists manufacturing's share of total employment at the midpoint of the last three decades, conveniently all expansion years. Table 2 also lists manufacturing's share at the beginning and end of the recession periods of the early 1980s and early 1990s. Results indicate that the relatively weak performance during the recession period was part of an overall trend towards a significant decline in manufacturing and not simply a sign of larger cycles

results for the regions of interest support the findings of Davis, Haltiwanger, and Shuh (1996) that reallocation and job loss during recession periods is an important indicator since recession-period trends may persist into the future.

North Versus South in the Recent Recession

The historic pattern in the eastern half of the United States over the last two decades is for much stronger manufacturing growth in the South region

TABLE 2
Change in Manufacturing's Share of Total Employment Over Time
North versus South Region
(East of the Mississippi)
and United States

| | Percent Change in Employment in Manufacturing | | |
| | | States East of the Mississippi | |
Year	United States	North	South
1975	18.90%	23.10%	17.50%
1979	19.00%	23.20%	17.70%
1982	16.80%	20.20%	16.00%
1985	15.90%	18.90%	15.30%
1989	14.60%	16.80%	14.30%
1991	13.70%	15.80%	13.60%
1995	12.80%	14.90%	12.80%

Source: Regional Economic Information System,
Bureau of Economic Analysis.

than in the North region. This overall pattern has been particularly evident during recession periods in the early 1980s and 1990s. Recession period job losses have typically been twice as great in the North region east of the Mississippi River as in the South region, and losses in the North significantly exceeded the national pattern, while losses in the South region were below the national average.

An interesting question is whether this historic pattern has persisted during the most recent recession that began during the year 2001. This question is addressed below in Table 3. That table shows the change in manufacturing employment in the North and South regions east of the Mississippi River from December 2000 through December 2001. These dates were selected to bracket the period of the recent recession, which is believed to have been relatively short and shallow. The recent recession began in March 2001 (National Bureau of Economic Research, 2002). While the end date for the recession has not been chosen officially by the National Bureau of Economic Research, the date will likely be November or December of 2001 (unless the economy slips back into recession during late 2002). Given these dates, the period of December 2000 through December 2001 covers the recession period.

In contrast to earlier recessions, manufacturing employment in the recent recession has declined as fast in the South region East of the Mississippi as in the North region. As indicated in Table 3, the decline in manufacturing employment is slightly higher in the South region East of the Mississippi than in North region.

This result, however, does not appear to reflect any significant deterioration in the performance of the South region. The decline in manufacturing employment is slightly less in the South region East of the Mississippi River than nationwide, as it has been during most recent recessions. The difference is in the North region. The decline in manufacturing employment in the North region is also less than for the nation overall, in stark contrast to recent recessions.

Focusing on Kentucky, the decline in manufacturing employment is similar to results in the South region overall. Manufacturing employment declined 6.2% from December 2000 through December 2001. This figure is also less than the national average decline of 7.1%.

TABLE 3
Relative Manufacturing Employment Change During Recent (2001) Recession
North versus South Region (East of the Mississippi),
United States and Kentucky
Durable and Non-Durable Goods

| | Percent Change in Manufacturing Employment: Dec. 00 through Dec. 01 | | | |
| Manufacturing | | States East of the Mississippi | | |
Industry	United States	North	South	Kentucky
All Manufacturing	-7.1%	-6.3%	-6.6%	-6.2%
Durable Manufacturing	-8.5%	-7.5%	-7.2%	-6.8%
Non-Durable Manufacturing	-5.0%	-4.3%	-5.9%	-5.2%

Source: Bureau of Labor Statistics

The relatively even performance between the North and South regions East of the Mississippi River also was evident among durable goods manufacturing, as indicated in Table 3. The decline in durable goods manufacturing employment was 7% to 7.5% in the North and South regions East of the Mississippi. Both rates were less than the 8.5% decline nationally.

A difference did emerge in the case of non-durable goods, however. The decline in durable goods performance was just 4.3% in the North, which again was less than the national average of a 5.0% decline. However, the decline in non-durable goods

in the South was 5.9%, greater than the national average.

As for Kentucky, the decline in durable goods manufacturing jobs was nearly 2% lower in Kentucky than nationally. However, the decline in non-durable goods manufacturing employment was similar in Kentucky and the nation.

TABLE 4
Relative Manufacturing Employment Change During Recent (2001) Recession
North versus South Region
(East of the Mississippi),
and United States
By Detailed Industry

	Percent Change in Manufacturing Employment: Dec. 00 through Dec. 01		
Manufacturing Industry	United States	States East of the Mississippi	
		North	South
Total	-7.1%	-6.3%	-6.6%
Durable Goods	-8.5%	-7.5%	-7.2%
Lumber & Wood Products	-4.8%	-3.3%	-3.9%
Stone, Clay & Glass Products	-3.6%	-3.9%	-1.8%
Primary Metals	-10.7%	-10.5%	-8.1%
Fabricated Metals	-6.7%	-7.7%	-7.2%
Industrial Machinery	-11.1%	-8.9%	-8.4%
Electronic Equipment	-14.6%	-11.3%	-13.0%
Transportation Equipment	-6.2%	-5.8%	-4.3%
Non-Durable Goods	-5.0%	-4.3%	-5.9%
Food & Kindred Products	-0.4%	-0.6%	0.4%
Textile Products	-13.2%	-9.8%	-10.6%
Apparel	-11.4%	-9.8%	-15.0%
Paper & Allied Products	-4.1%	-4.8%	-3.2%
Printing & Publishing	-6.2%	-5.2%	-3.7%
Chemicals & Allied Products	-1.8%	-1.4%	-3.6%
Rubber & Misc. Products	-6.7%	-6.8%	-7.7%

Source: Bureau of Labor Statistics.

Results in Table 4 provide additional information on the relative performance on durable and non-durable goods employment. Generally speaking, growth rates within specific industries follow a similar pattern in both the North and South regions East of the Mississippi River as nationally. The industries with modest job loss do not tend to vary by region and the nation overall, and the fastest shrinking industries also are consistent.

However, there are subtle differences that may explain the aggregate patterns observed for durable and non-durable manufacturing. Looking at the durable goods industries, results indicate that areas to the East of the Mississippi River experienced fewer job losses in the major heavy industry categories. Job losses were less in both the North and South regions than nationally for primary metals, industrial machinery, and electronic equipment. Milder job losses in these key sectors contributed to lower overall job loss rates for durable goods.

Another factor that may have benefited the South region East of the Mississippi was the industrial mix in the region. The three durable goods industries illustrated in Table 4 with the most rapid job loss nationally were primary metals, industrial machinery, and electronic equipment. Nationally, each industry experienced more than a 10% decline in employment between December 2000 and December 2001. These industries accounted for 24.9% of manufacturing employment in the nation overall and 26.5% in the North region East of the Mississippi but only 19.6% of employment in the South region. The South region has a smaller share of its industrial base in those industries that declined most rapidly.

Industry distribution also may have contributed to the faster pace of employment loss among non-durable manufacturing industries in the South region. As Table 4 indicates, employment in the textile and apparel industries was hardest hit among non-durable goods manufacturers in the latest recession. These industries account for a much larger share of manufacturing employment in the South region than nationally, and a much smaller share in the North region. These industries accounted for 9.9% of manufacturing employment in the South region versus only 6.0% nationally and around 4.0% in the North region.

Regions Within Kentucky

Statewide data for Kentucky indicate that manufacturing employment declined slightly less in the state than nationally during the 2001 recession. One natural question is whether this pattern was consistent within the metropolitan areas of the state. Table 5 below contains data on job losses in the manufacturing industry in the Lexington and Louisville metropolitan areas. Recent data was not available on a monthly basis for smaller metropolitan areas of the state (with the exception of the Owensboro MSA).

Results for Lexington and Louisville indicate that the Lexington MSA experienced greater job losses during the recession period. Lexington lost approximately 7% of manufacturing employment from December 2000 to December 2001, roughly the same rate as nationally. The Louisville metropolitan area lost 5.6% of manufacturing employment during

TABLE 5

Relative Manufacturing Employment Change
During Recent (2001) Recession
For Selected Metropolitan Areas Located In Whole or In Part in Kentucky
Durable and Non-Durable Goods

Industry	Percent Change in Manufacturing Employment: Dec. 00 through Dec. 01				
	Louisville Kentucky	Lexington Kentucky	Evansville Indiana	Cincinnati Ohio	Huntington W. Virginia
All Manufacturing	-5.6%	-7.2%	-3.1%	-4.7%	-9.1%
Durable Manufacturing	-5.6%	-7.4%	-6.4%	-6.6%	-11.5%
Non-Durable Manufacturing	-5.7%	-6.6%	0.0%	-2.6%	-5.4%

Source: Bureau of Labor Statistics

the recession period. As was found for the South region overall, the two Kentucky metropolitan areas had fewer job losses than the nation in durable goods, but greater job losses among non-durable goods.

Manufacturing job growth also was examined for Evansville, Indiana, Cincinnati, Ohio, and Huntington, West Virginia, three metropolitan areas centered in other states but with significant Kentucky components. The Evansville and Cincinnati regions outperformed Lexington, Kentucky and the nation, with lower rates of job loss. The Huntington, West Virginia metropolitan area experienced a greater rate of job loss than in Lexington, Kentucky and the nation, primarily due to large job losses in durable goods manufacturing.

Summary

There was a substantial decline in manufacturing employment of more than 6 percent in the State of Kentucky during the recent recession. This rate of decline, however, was below that experienced in the nation as a whole, and similar with the job losses experienced in other states in the South region. These results are consistent with but somewhat worse than Kentucky's performance in the previous recession in the early 1990s. In that recession, the rate of manufacturing job loss in Kentucky was well below the average in the South region. This result suggests that the Kentucky manufacturing sector continues to be relatively strong, though perhaps not as well positioned as in the early 1990s.

There are, in addition, at least two developments during the recent recession that portend a potential for change in the fortunes of the Kentucky manufacturing sector, and the manufacturing sector in the South as a region. First, the rate of manufacturing job loss in the North region of the United States moderated during the recent recession, with states in this region shedding jobs at a slower pace than the nation as a whole. A north to south migration of manufacturing jobs in industries such as automobiles and parts has been one key to success of the manufacturing industry in Kentucky and the South. The relatively strong performance of North region states during the recent recession may suggest that the North region, after years of loss, is becoming more competitive as a manufacturing location.

The second change is that Kentucky and the South region experienced a faster rate of job loss among non-durable goods manufacturers than the nation as a whole. However, this faster rate of decline appeared to be driven in part by significant declines in the textile and apparel industries, which are concentrated in Kentucky and the South.

Endnotes

1 Estimate based on the change in manufacturing employment in Kentucky between December 2000 and December 2001.
2 GDP by industry figures are only available from BEA starting in 1977, but related series also show a relatively stable share output.

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